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L. P. BETHEL, M. D., D. D. S.,

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OHIO DENTAL JOURNAL.

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CONTRIBUTIONS.

Ancient Japanese Dental Art.*

BY T. A. LONG, PHILADELPHIA, PA.

IT is but a few years since the Japanese have been brought to our notice in the arts and sciences, although they, as a nation, are very much older than we, and in the dental art antedate us by more than a century. We find examples of their skill in artificial plates, older than this nation—made before the discovery of America. In this work we find rare skill displayed, and an amount of patience expended that seems marvelous.

When we consider the crude materials and tools with which they had to work, and consider the outcome of their patient labor, we must acknowledge the bright intellect that produces such exquisite results.

There is an old story to the effect that the king, to show the great skill of his people in the arts, sent to the ruler of another country, a fine cambric needle, as a sample of their fine workmanship. This needle was returned to the sender with an eye drilled through the point, into which was inserted another finer needle, showing the superior workmanship of the people to whom the original was sent.

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*Read before the Ohio State Dental Society, December, 1899.

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

We have almost a similar example before us in the collection of Japanese artificial plates on exhibition here, in a case of a celluloid plate mounted with human teeth. This Japanese student, educated at one of our colleges. was taught to make celluloid plates mounted with porcelain teeth in the ordinary way. He then went back to Japan, and sent us as a specimen of his skill, a celluloid plate mounted with human teeth. It is quite doubtful whether this specimen could be duplicated in this country.

It is only within a comparatively few years that the Japanese have made much progress in the dental art; but the progress has been rapid, and an exhibit of modern Japanese dentistry would compare favorably with any American or European collection.

There are two colleges of dentistry in Tokio, the professors all being natives. Some graduated here, others in Europe and Japan. Each school is largely attended, and all their methods and appliances are modern—such as are used and taught in Europe and America.

I have here specimens of four dental journals, which are now published in the Japanese language, and to aid you in reading them, I would say that the title page is on the back cover, and you commence to read from the top downward like a column of figures, commencing at the upper right hand corner.

We have lately received through our Japanese dealers, specimens of artificial teeth which are fairly good imitations of our forms and colors, and it is only a matter of time when the Japanese will compete with the world in almost every line of manufacture.

The company which I have the honor to represent have, after years of patient work, made a collection of specimens of Japanese artificial dentures and instruments, wood-working tools, etc., pertaining to the dental art, which I herewith present. This will give you a better idea of the rapid strides made by them in the pursuit of your profession, than pages of history could convey.

First on the list is a wax model of a partial case for the upper jaw. You will notice that the model and impression are both of wax. They used no plaster. The operations of making an artificial plate is as follows:

After having obtained the model of hard wax, a block of wood is selected of the proper size, into which holes are made to make spaces for any teeth that remain in the mouth. (This is for a partial denture). The operator cuts away a portion of the wood to roughly approximate the shape of the model, then covers it with a coating of thick glutinous water-color paint (usually red); then presses this model lightly against the block of wood.

Wherever the model touches the wood it leaves a portion of the paint. After removing the model, the painted portions on the block of wood are cut away, and this operation is repeated until a perfect fit is obtained.

Before finishing the carving, the model is placed in the articulator, which consists of a wooden box with a sliding shelf, on to which the model is placed, and to which the block is also fastened temporarily. This is to insure closure of the model and block of wood in the same position every time.

The articulator is also brought into use, after the plate is carved to a fit, to articulate the teeth when being carved into their places on the wooden plate.

The wood used in making teeth-plates is a species of plum tree, very hard and close grained, and resembles our apple tree wood. The tree grows to about six inches in diameter.

The teeth used were of various kinds. Many human teeth were used, but ivory and stone seemed to be the most popular. Many plates are made with the teeth carved from the same block, making the plate and teeth all of one piece. The stone teeth used are made from a grayish kind of stone, somewhat resembling our soap-stone, but harder, and is not a bad imitation for color of some of our dark shades of porcelain teeth. Some plates are carved in one piece in ivory, and are beautiful examples of art in that line.

We do not find any carved molars or bicuspids in the collection, except for small partial cases, the grinding surfaces being covered with little nails with large heads, like hob nails used in the soles of coarse shoes. Some of the plates shown have been worn so long that the heads of these nails have been worn entirely off.

We have also specimens of crowns and bridges made probably a hundred years ago. One, an ivory carving of front teeth attached to the natural roots by wooden pegs. Another, a single lateral upper incisor—a human tooth—set in ivory, with a large hole made through it laterally, into which cotton is packed. When the cotton is moistened it swells and presses against the adjoining teeth, and by this means is kept in place. A very ingenious device.

When we examine these artificial plates, we are at a loss to know how some of them could ever have been retained in the mouth; but they show unmistakable evidence of having been worn for years. There are no suction or air chambers to be seen, yet some of the mouths must have had no arch at all.

One thing noticeable is the closeness of the joints where the teeth are joined to the plate. This is done by carving a socket into the plate, into which the tooth fits perfectly. A hole is made laterally through these sockets, running from one side of the plate (as far as the teeth extend) to the other. Then a string is drawn through these sockets and through corresponding holes made through the teeth laterally, thus securing them in position. No trace of this string can be seen when the piece is finished, and the string seems to last as long as the rest of the piece.

BLACK TEETH.

You will see many black teeth among the collection. These are for married women, and have been made by the S. S. White Company, for many years for the Japanese market.

There is a legend to the effect that a beautiful Princess, whose husband lost his life in battle, was so grieved at her loss that in order to repel the advances of the many suitors for her hand, stained her teeth black, in order to mar her beauty. She being of high rank was a model for the rest of the high born ladies in the kingdom, so far as appearance went. The custom was adopted by the high caste ladies in sympathy with the princess, and came into general use, until the original cause was lost sight of, and it came to be looked upon as a mark of beauty and aristocratic style. These black teeth were worn by married ladies only. The custom is now almost obsolete.

EYTRACTING.

No. 98 represents a hammer or mallet used in extracting teeth, is a piece of lead wrapped in cloth, and held in the palm of the hand, and is used for striking the end of the steel punches. These punches are concave on their smaller ends, forming an edge, which is placed at an angle against the neck of the tooth to be extracted, and a blow from the mallet forces it upward out of its socket.

There are also other extracting instruments. A piece of narrow iron bent upon itself like the letter u, formed over a piece of wood, and wrapped with twine. The iron loop is placed over the tooth, and a twisting motion of the hand removes the tooth. You will notice that the instruments are very short and could easily be concealed in the hand of the operator.

You have heard the fairy tale about the Japanese dentist extracting teeth with the thumb and finger, unaided by any instrument. Some tourist, who spent six weeks in Japan, went home to write up a history of that country, has seen a tooth extracted in that manner and with this instrument, but the Jap was too smart to let him see the instrument

In wood working tools you will see that the saws are all draw cut and very thin. The Japenese wood workers work towards them in sawing and planing. This enables them to use much thinner saw blades than we do, without danger of bending or buckling them.

In the collection you will notice a lady's outfit for staining her teeth and stenciling her eyebrows and face. The various paper packages are filled with black powder, into which is dipped the brushes made of wood, after being moistened with warm water and acid. The teeth are rubbed in this way until the desired color and polish is obtained. This operation, like hair dressing, must be repeated as often as appearance would necessitate.

I will not tire you with any further description of the specimens on exhibition, but would say that with the aid of the catalouge accompanying the exhibit you will be well repaid for your time by making a careful study of the collection.

The specimens exhibited by Mr. Long were as follows:

1. Wax model and impression of upper jaw. 2. Wax model. 3 to 8 show the operation of making a wooden plate. 9. Finished plate with front teeth of stone, with nails substituted for molars. 10. Wooden plate with teeth of ivory, stained gums, and depressions in the wood to occlude with the lower molars. 11. Wooden partial plate, front teeth of ivory, and molars of stone facings and occluding surface of nails. 12. Wooden plate with human front teeth, and nails for molars. 13. Wooden plate, stone front teeth, and nails for molars. 14. Wooden plate, stone front teeth blackened, and nails for molars. 15.

Partial plate of teeth, carved from one piece of wood and stained with black. 16. Full lower plate of wood and human teeth. 17. Partial plate of wood with stone teeth. 18. Lower set of wood. front teeth of stone, molars of nails. 19. Partial set of celluloid, with porcelain teeth. 20. Partial plate of rubber, with porcelain teeth. 21. Full upper set celluloid, with human teeth. 22. Partial plate of rubber, with black porcelain teeth. 23. Lower plate of rubber, with front teeth of black rubber and molars of porcelain. 24 and 25. Upper partial set, with plate and teeth of ivory carved in one piece. 26. Piece of bridge-work of ivory, carved in one piece. 27. Single crown, a human tooth set in ivory. 28. A single tooth and partial plate, carved in ivory in one piece, with the tooth stained black. 29. Two upper centrals and small plate carved from stone in one piece. 30. Lower partial plate, with humun teeth set on ivory plate. 31. Four upper incisors, with teeth and plate of ivory, in one piece. 32. Bicuspid and molar, carved in one piece in ivory. 33 to 95. Old plates worn out and discarded, showing various methods of construction. 96 and 99. Articulators. 97. Grass used for polishing wood. 98. Hammer for extracting with a punch. 100. Ax. 101. Drill. 102. Adze. 103. Stencil for decorating the face, eyebrows, etc. 104 to 109. Steel files. 110. and 111. Shark skin files. 112. Sea grass file. 113 and 115. Stone files. 114. Piece of shark-skin. 116 to 120. Chisels. 121 to 125. Saws. 126 to 140. Wood-working tools. 141 to 151. Extracting instruments. 152 to 161. Probes, gum lancets, scalers, etc. 162. Tongue-holder. 163. Small hammer. 164 and 166. Pliers. 165. Shears. 167 to 170. Modern Japanese forceps. 171 to 204 represent an outfit for cleaning and staining the teeth.

Dental Dots.

BY DR. D. GENESE, BALTIMORE, MD.

TO REMOVE TEETH FROM A RUBBER PLATE WITHOUT DANGER OF CRACKING OR ETCHING THE TEETH.—Boil the plate in glycerin in a porcelain pan till it smokes, and the teeth will come away clean and free from discoloration. Put them back in the glycerin till cold to anneal them and when cool wash in warm water, they will be as bright as new and free from grease.

When cold the glycerin can be bottled for future use. Unlike oil, it is odorless when used hot.

IF PLASTER ADHERES TO VULCANITE AFTER VULCANIZING, put the plates in warm water and add about 2 drachms hydchlo. acid and in half an hour they will be clean and free from odor. When taken out wash in water with a small portion carb. sodium to neutralize acid on tools.

A Hydro-Mechanical Theory of Sensitive Dentin.*

BY G. S. JUNKERMAN, D.D.S., CINCINNATI.

IT is not the object of this paper to travel any new and undiscovered country, but rather to turn backward on the track of discovery and glean from the wreck of discarded dental fads a few ideas for the intelligent application of dental therapy. It is a false premise to assume that a practical man is independent of theory. A theory usually precedes a good practice. A perfect balance between the two is requisite always to a trusty practitioner. Theories may exist that cannot be proven much less disproven. No theory, however, is not tenable that does not satisfy all the phenomena connected with it.

Cataphoresis has its fling being based on the supposition that it was a local anesthetic. Having failed in this department of therapy it was eminently successful in another giving a most excellent account of itself as a pulp destroyer. Cataphoresis may not have brought to light the fountain of eternal painless dentistry, but its intimate study has caused a new light to fall and while it may not have been the goal, it certainly has been a path finder. Cataphoresis carries with it the thought of an osmosis, the track of dentin being an osmotic membrane, the pulp on one side, and the external fluids on the other. We think of the dental tubuli but we forget the nerve fibrilæ. The accepted truths of cataphoresis prove the dental tubuli to be filled with fluid and not fibrilæ. The next step is to account for the phenomena of sensitive dentin, conceding the absence of fibrilæ.

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*Read before the Ohio State Dental Society, December, 1899.

Impressions must be conveyed to the pulp which is the seat of all sensation in the teeth by means of hydro-mechanics: pressure, or motion of fluids in tubes. Picturing to yourself the principle of the hydrostatic paradox and using the pulp-chamber with its contents as the vessel, and one of the dental tubuli as the tube we have a reproduction of the hydrostatic paradox. Pressure produced on the end of the tube will be equally distributed to the contents of the pulp chamber, whether the pressure be produced by cotton or the stroke of an instrument. If you put a bundle of these together you have an osmotic membrane upon which impressions outward or inward may be made by any substance that will induce osmosis. Sugar and salt produce pain upon the pulp through these tubes by disturbing the equilibrium of the fluid in them, producing traction or compression. The condition known as teeth being on edge is another exemplification of the same principle. The continued use of acid when the teeth are "on edge" is not productive of pain, but the instant an alkaline food is brought in direct contact with the teeth the osmotic influence is changed, and a disturbance in the tubuli occurs with resulting pain. In furtherance of the same phenommon, if a hard body as the smooth surface of a steel instrument be brought in contact with the "on edge" surface no pain results and in reality becomes a curative treatment of that condition, closing up the osmotic surface by compression. Nerve fibrilæ will not account for all the phenomena of sensitive dentin, nor are their existence consistent with the comprehension of a system of nutrition and circulation in the dentin and enamel. We do not comprehend this circulation as one of a general nature, causing the waste and repair in the tissues of the teeth in general, but rather of a special nature, but nevertheless a circulation: just such a circulation as occurs in the terminal tissues in every part of the human body, a circulation by osmosis where the fluids are converted into the special tissues for which they are intended. That during the life of the pulp the dentin and enamel are supplied with nutritive fluid cannot be denied, conversely after the death of the pulp these tissues manifest symptoms of inanition characterized by lack of translucency of enamel, and increased chalkiness of the dentin. The same condition exists in old dentin and enamel where the dental tubuli have filled with lime salts and where the circulation has become wholly or partially strangulated, the pulp still maintaining its vitality. If we admit of a circulation in the enamel and dentin we have sufficient data to admit of a demonstration, without nerve fibrilæ, of sensitive dentin on the principle of hydro-statics and hydro-dynamics. Upon this theory it is of interest to examine the phenomena of sensitive dentin. The greatest sensibility is found at the periphery or the line of junction between the enamel and dentin; because here we find the greatest number of terminals of tubules. Force produced at this point becomes magnified because it is transmitted to a greater number of tubules, and the pressure or motion of the fluid is in proportion to the number of tubes impressed. The periphery is at the greatest distance from the pulp and the pressure made here must be distributed through a greater number of particles of fluid and consequently magnified proportionately when it reaches the pulp. The force increases in direct proportion to the length of the tubes. Sensitive dentin is found most frequently and to the greatest extent in well organized teeth. In these cases we find a rank growth of the dental tubuli. There are a great number of tubules and there is also a greater tendency to anastomotic condition, the formation of a net-work, radiating towards the periphery. This condition increases the length of the tubule and consequently produces greater disturbance when force is applied. Conversely a poorly organized tooth is less prone to sensitive dentin. The tubules are straighter and consequently shorter. There are also not so many of them and those that are may be broken by defective tracts that so frequently appear in poorly organized dentin. It does not necessarily follow that all well organized teeth have sensitive dentin nor that all weakly organized teeth have lack of sensibility. The dental tubuli may have been infiltrated by calcareous matter thereby destroying the fluid continuity, and in such cases well organized teeth may be operated upon without pain.

Poorly organized dentin may be extremely sensitive, not alone on account of the delicate state of general health increasing the susceptibility, but because the softened tissues permit more easily a slight amount of force to be distributed to the greater number of tubuli. As an example of this condition cervical cavities containing a layer of softened dentin are frequently sensitive only until this layer is removed. The application of the instrument to any part of the layer distributes the force through the entire surface which this layer covers. The therapy of sensitive dentin indicates the hydro theory to be correct. Heat and those other agents that are absorbers of moisture have proven the most beneficial ones. Anodynes not possessing these qualities have been failures. Cocain and cataphoresis should have anesthetized the nerve fibrilæ, but water and cataphoresis have been just as effective. The result in both cases was an osmosis, but the failure of any wonderful end, except to eventually destroy the real seat of sensitive dentin, the pulp. We have the remedies for sensitive dentin in anhydrous sulphuric acid, but other drugs in milder cases answer quite as well, but in the case of the stronger medicine we have not the power to limit the effect. Osmosis once established in the strata of dentin is not easily accessible to interruption. We look upon the fluid in the dental tubuli as not only a circulatory fluid for nutrition, as the blood for other tissues, but as the carrier of impressions accomplished by the nerves in other tissues. The equilibrium of these fluids is maintained by capillarity, disturbed by chemical re-actionary changes and also by mechanical force; thus all this force is produced by the pressure or motion of fluid in tubes and owes its distribution to the laws of hydrostatics and hydrodynamics.

DISCUSSION.

Dr. C. T. Whinery, Toledo: In opening the discussion on this paper I will begin by quoting the doctor. "No theory however is tenable that does not satisfy all the phenomena connected with it." The theory as elaborated does not explain all the phenomena connected with it. For instance, the doctor says "the tract of the dentin being an osmotic membrane." If this is true the doctor's theory is exploded, as he states in his last sentence that the pain is due wholly to hydro-dynamical causes. If it is osmotic (the interchange of liquids of a different density) then certainly and positively the chemical, acid, salt, etc., can stimulate the nerve endings by the commonest of all nerve stimulant, a metabolic or chemical action.

Again, the doctor says: "Impressions must be conveyed to the pulp, which is the seat of all sensation in the teeth by means of hydro-mechanics." I have a patient who has four Logan crowns who complains of a sensation about them when he takes hot liquids, acids, etc. The theory of the doctor that sensation is due to the increased pressure does not explain this cause, while the theory that sensation in teeth may be caused by either mechanical or chemical changes, setting up metabolism which is the origin of all sensation in nerves. explains this case perfectly.

Again, quoting the doctor: "If you put a bundle of these tubes together you have an osmotic membrane upon which impressions outward or inward may be made by any substance that will induce osmosis." I should answer if it is osmosis then the theory of chemical stimulation is not only tenable but probable. If it is merely hydro-mechanics the term osmosis is incorrectly used.

The following explains the doctor's statement that continued use of acid is not painful. No, it is not, because we have stimulated and continued to present the stimulus which began it, and thus the nerve does not present further evidence of irritation (as electrical stimulation for extraction and sciatica) until we present a stimulus whose kotabolic or nerve stimulating action differs from that in use.

Again, the doctor speaks of a steel instrument placed on the "on edge" surface of a tooth causing no pain, and exerting a curative influence by preventing osmosis. If the argument were consistent that pain is caused by pressure or traction on nerve endings, the pressure would increase the pain. My theory is this, that if the pulp is healthy, an ordinarily cool instrument would be within the normal temperature range of the teeth and no chemical action taking place, there would be no stimulation and no pain.

The doctor speaks of a circulation in the enamel. We know that many support the same view, for the microscope reveals markings between the individual elements and prisms. But it is proven that the enamel contains only two or three per cent. of organic matter, and this according to Tomes, is found to be mostly water, and if any activity occurs in this structure it must be of low grade. Let us concede for further argument that there is a circulation in the enamel. Why is not the enamel sensitive as well as the dentin? The enamel circulation must necessarily be a part of and a continuation of the dentinal system, and consequently irritation would be carried to the pulp almost as readily as if the cause occurred in the dentin.

Further, the doctor says: "Force produced at the periphery of the dentin is magnified because it is transmitted to a greater number of tubules." Force cannot be magnified; it really is lessened by transmission to a greater number of tubules and greater the loss occurs.

Is sensitive dentin found most frequently and to the greater degree in well organized teeth? Does not nature tend to overcome poorly organized teeth by following the established laws of bone pathology in other parts of the body by opening up new channels or lacunæ as receptacles for more nourishment to the poorly organized and diseased tissue, thus presenting a greater surface of osmosis and capillary action?

Later in the article the doctor speaks of dehydration as lessening the sensitiveness of dentin. If the theory of sensitive dentin depended on the proper equilibrium being maintained between the external air and the pulp, this dehydration would cause traction on the nerves of the pulp and destroy the equilibrium which he maintains as necessary to a painless dentin. It seems easier to explain this on the grounds of dehydration as removing any chemical continuity by osmosis or capilarity and thus preventing any chemical from as quickly reaching the nerve end as it would if the tubuli were filled with a fluid.

As a summary of the preceding causes for the irritation of the nerve endings in the pulp, the theory already given (that sensation in teeth may be caused by either mechanical or chemical changes, setting up metabolism which is the origin of all sensation in nerves) seems to satisfy all the phenomena connected with it.

The doctor's paper is a good one for the discussion it can bring out. And while I cannot agree with it in many ways it presents a field for work that should not be unproductive of good results.

Dr. H. A. Smith, Cincinnati: I was very much interested in the paper, it was a strong one, particularly from the standpoint of the writer.

There is just one thought that comes to me and that is that the statement has been made and I may say somewhat dogmatically, that the dental tubuli are filled with a fluid.

I think the more recent investigations have proved it differently and I might say, that the stand taken by writer is a very old doctrine, promulgated in the early days by Dr. Dickinson.

More recent investigations in histology of the dentin show that the tubuli are filled with a protoplasmic mass and I might say that this was long ago demonstrated by John Tomes of England, and this with many other discoveries gave him everlasting fame, and for which he received a knighthood. Another point in reference to these tubuli filled with the fluid, analysis of dentin shows there is 10% of water only in the tooth substance, analysis also shows 25% of organic matter in the tubuli, if they were filled with fluid we would not have this large proportion of 25% organic and 75% of inorganic. I am only raising a doubt about the possibility of the existence of water.

The character of the contents of the tubuli has not been settled, that is whether it is a nerve tissue or not. Clinically they can hardly get away from the apprehension that it must be some form of nerve tissue or combination of same. If this is true of our clinical cases as well as microscopic investigation, the writer is at sea; especially on the theory given to-day.

A point in connection with the 25% organic matter, it is stated in the investigations of Seyler, Tomes and others that the proportion of water in the dentin itself is 10%, if we have 25% of organic matter and only 10% of water in the tissue, what is the rest of organic material, it must be solid tissue. Of course there is organic matter in the walls of the dental tubes and in the radiating portions, but that is not enough to account for this difference. So that the contents of the tubuli would have to be somewhat solid, there would have to be a certain amount to bring up organic portion.

Dr. Custer: It was some 10 or 12 years ago, possibly longer, that Dr. Andrews gave a name to those odontoblasts whose fibers extended in and filled the dental tubuli, he called them fibriloblasts. Now, so far as I have been able to observe the fibriloblasts in distinction from odontoblasts are made up essentially of the same material as the odontoblasts, except that they have nerve function, it is also possible for simple protoplasm to be very highly organized fibriloblasts. Their entire function, besides supplying nutrition, is one of conveying very high sensations and it was that which was shown by Dr. Andrews that to my mind more clearly answers the question of sensitiveness of dentin. It is highly organized protoplasm, it cannot be simple water or fluid, but it is highly organized protoplasm whose function is that simply of carrying nutrition and with it the conveying of sensation.

Dr. Arnold: I should hesitate to decide the structure of the contents of the dental tubuli, and will simply make a point in reference to both questions as given by essayist and question as propounded by discusser. Both were quite ably presented, to my knowledge and estimation. In discussing this question, the combination of the contents of dental tubuli we forget the benefits in the treatment of sensitive dentin, the benefit of both theories as propounded in both cases. From clinical experience we know too well that often with the strongest dental anesthetic the effect is very slow and tardy, in fact mostly so, now again we can use a milder therapeutic remedy and combine with it pressure and we get very active results, as shown by more recent introduction of method known as "pressure anesthesia." It is a proper term, but, however, when we read of the method or science of the so called pressure anesthesia as given by the very man who introduced it, we do not comprehend any pressure about it. The method was introduced by Dr. Morton of New York, he introduced the term, yet in his particular method he does not advocate pressure at all. There is, however, a method known properly as "pressure anesthesia" you may combine some of the preparations, notably cocain and apply with pressure and you do get most prompt anesthetic conditions possible. So then we have a combination of mechanical and chemical agents working to this end. So that is strictly in clinical experience, whatever the contents may be we have little experience, not sufficient to prove the composition of it, whatever it is the metabolic changes combined with mechanical dynamic force does give us a prompt action in that direction, perhaps the most perfect that I am aware of.

Dr. Smith: Since you have started me in this discussion I will continue, I want to defend myself. Now in reference to vitality of enamel tissue. Has the enamel any vitality? Is it possible for it to have nutrition? If you call the development of dentin, it is developed first and has special organ to do it. The enamel follows after, developed from its organ and has its special function.

When the enamel is completed the enamel organ disappears, the enamel is laid down on the dentin has no connection with the dentin, how then can the enamel receive nutrition?

It is so far from the pulp and has no connection with the pulp, so it is not possible for it to have sensation, and if it has no sensation, how can it have nutrition?

Now these are problems for your consideration, I am only suggesting them.

We know that enamel is brittle when the dentin dies. How might this be explained?

Can we assume that there is a certain amount of circulation of fluids in the enamel?

Dr. Williams of London in his more recent investigations shows that the living matter in enamel is nothing that can be distinguished, but it is something which resembles organic tissue, has no structure and has no connection with the pulp except through abnormal dentin. In view of these facts then I say is it sensation, when we think of this?

DR. W. T. McLEAN: The theory advanced by the essayist is hard to disprove to my mind. The enamel, I believe, does not get nutriment after development of teeth, it is just as Dr. Smith has stated. Everything in the direction to overcome this pain should be worthy of our consideration. Operators should be more careful in the use of their instruments, use only the sharpest excavators and burs and they would not have this trouble. Sharp instruments are what is required and do not do as I have seen a number of operators, have very dull burs and thereby be required to hold them on the tooth a long time to accomplish their purpose. I have seen them held on a tooth until the temperature must have been raised to at least 400° and hence there is no doubt that it produces pain.

DR. M. H. FLETCHER: The position the essayist takes is certainly hard to disprove, but we may accept his theory that the dental tubes are filled with a fluid or a protoplasmic mass, from the fact that almost any substance in the way of metal even may be pressed into a different shape, it may be molded, take so soft a substance as protoplasm or fluid which fills a tube, it would not take very much pressure at one end of tube to produce its effect at the other. So I believe the essayist position may be maintained on that particular topic.

As far as contents of the tubes is concerned I think Dr. Heise will bear me out on seeing some specimens last year in my office, where the contents of tube show very plainly, in the centre of the tube could be seen a fibre or material different from that on the side or at the periphery of the tube showing out perfectly plain. Now in support of what Dr. Smith says in regard to there being something more than fluid in the dental tubuli, I think this would go to support that theory. These sections that were made for these specimens I speak of, were dried specimens, after dehydrating they were cut with a file. If it were fluid which filled the tubes it would certainly have been driven out long before we filed or cut into the locality. The particular specimen was that of secondary growth of dentin, the tubuli ran in various directions, so my own experience with these cases would make me believe that the contents of the tube was of protoplasmic nature or gelatinous substance of some kind embedded in the centre by the harder fibre, whether of nerve substances or not I am not able to say and I do not know that any one has proven what it is. But the fact that the tube is filled with protoplasm does not disprove the position of essayist, to my mind. Dr. Smith's position in reference to the enamel is well taken. As he said, the enamel organ disappears when the enamel is formed, it is built from the centre out.

Question: Did I understand Dr. Smith to say that the enamel did not recive any nourishment?

Dr. Smith: I did not say dogmatically. It is built up in a manner entirely different from the dentin, from without inward, and it is a question I would not wish to decide. From a study of its formation and histology, why it seems to me it can have no nutrition. How could it get it?

Ques.: If this is the case how could our toe nails and finger-nails grow if they received no nourishment?

Dr. Fletcher: Because there is a structure beneath them which gives them nourishment and they are pushed out as formed. It is different with enamel, it receives nourishment only while being formed from the enamel organ, then the organ disappears.

Ques.: At what age?—*Ans.:* Before eruption.

Ques.: So, if a man lives for eighty years, you think the enamel will live all that time without receiving any nourishment? —*Ans.:* Yes, sir, that is possible.

Ques.: The point is this, I maintain that there cannot be anything which will exist in the natural world unless it receives some nourishment.

Voice: How about dead teeth?—*Ans.:* They receive nourishment from the periosteum.

Dr. J. S. Cassidy: I not being a histologist cannot satisfactorily answer that question. The thought occurred to me about dehydrating the part and thus rendering it less able to conduct sensibility.

Dr. Junkerman tried to make the point that moisture present in the dentin hastened the ability to conduct sensation, whether a conductive material or not.

Whether the contents is liquid or semi liquid seems to me to make practically no difference in the conductivity of the substance. If the contents of the tubuli is the only conducting material in the dentin, then the larger the tubuli the better the conducting power. But sensibility has existed in the tubuli when its canals have nearly been closed, so this refutes that. So far as I may say I am not an authority on this and I hate to be dogmatic. I think any structure when organized partakes somewhat of life as long as it exists or does its duty; enamel is an organized structure, as much so as any other part of the body, except that it does not have as much of organic matter, but it is the product of vitality, as much so as any other highly organized tissue of the body. I think the enamel does contain some life so long as the peridental membrane exists, whether the pulp is devitalized or not, just in ratio of its necessity, however that may be. This is simply an idea of mine. There is no structure, the product of vitality, that does not retain a certain amount of vitality, or else it would soon be dead.

Dr. Taft: I have no doubt that the enamel of all teeth with live pulps possesses a certain degree of vitality. All know that sometimes enamel in youth is comparatively soft, easily drilled into; it becomes harder as age progresses, and by and by it is very much more dense and resistant than in early life. Another point, all have seen that after the devitalization of the pulp the dentin and enamel also becomes more easy to break, and the rule is, in such cases as this, to cut down the borders of the enamel more extensively than we do in live teeth, because we have found we can put more reliance on the enamel borders of the live tooth and can depend more in the permanency of our work than a case where the pulp is dead. How often after filling a lifeless tooth do we find that after two, three or four years the enamel begins to crumble away, and it is finally the cause of recurrence of decay: how do we account for this, if there is no sustenance from the live tissues beneath it? The enamel organ is all gone, except so far as Nasmyth's membrane is concerned, it may be present. It is an exceedingly dense body and is for the protection of enamel early in life. As has been stated, the enamel is formed from within outward, aud it remains in contact with the living structure of the dentin and receives its nutrient supply through the ends of the canals which perforate the dentin, the plasma contained in the canals passes out and comes into contact with the inner surface of the enamel and is taken up we say by imbibition, and supplies its wants. The points which the paper presented here were presented more than thirty years ago and the whole ground traversed over, but now and then this question is brought up again and has been discussed as it has been to day without arriving at any definite conclusions. Dentin itself is susceptible of sensibility, independent in the main of the pulp. I infer that from this fact, oftentimes a layer or portion of the dentin under the decayed portion, after cutting away the decayed portion, is very sensitive, but pass through that and there is no longer any special sensitiveness. How is that? If the impression is made on the pulp, how is it that this condition of things exists?

My impression is that certain areas of dentin are susceptible when in an inflammatory condition, we call it inflammatory for accommodation or want of better expression, there is no better name for it. Any area is susceptible when in this condition. From the fact that it can be cut away as you know in many instances, and is absent entirely after cutting in toward the pulp, it is proof of my theory. I want nothing for the treatment of sensitive dentin except sharp excavators and burs.

Dr. Junkerman: Answering Dr. Taft's statement first. He brings up the question as to this soft layer of dentin referred to in the paper, which to my mind fully explains the reason why the dentin is sensitive; cut that layer away and there is no more sensitiveness, for the reason that the pressure produced upon this layer can be easily extended over the entire surface of the exposed dentin. A pressure produced on this soft tissue is extended ever a great number of dental tubuli, the instant you take this away, by producing the same amount of force upon the layer underneath it, which is hard, without pain, in this case you do not strike as many of these little tubules. To my mind and in lieu of facts which have been proven by investigation, and until something better is offered I must accept this theory. A theory does not mean that anything has been proven, but we all like to have some scheme upon which we can operate. If we do not know we like to theorize as to what we think the conditions are. To my mind this seems to satisfy all the principles better than any other theory that has been advanced. I may be entirely wrong, but until you give me a better one I must look at it in this light.

There is very little I can say because nearly all the questions we have received have been answered by some other gentleman. Dr. Fletcher answered Dr. Smith's question as to contents of dental tubuli, I do not believe the paper asserts the fact that they are filled with water. It said it was fluid, whether water or semi-fluid it matters not. If it is fluid the theory applies. In other words, protoplasm as Dr. Smith said, protoplasm is equal to water as far as theory is concerned

The question was raised as to the magnifying the force in the dental tubuli. The statement was made in the paper, "the longer the tubuli the greater the amount of force." I am not responsible for that statement, for that is one of the physical paradoxes, "the longer the tube the greater the pressure." If we place a tube in a barrel of water, and increase its length thirty or sixty times, the pressure will be magnified thirty or sixty times. That is what I mean by the magnification of force in the dental tubuli. I know that this theory is in some respects old, thirty years as Dr. Taft says; he is perfectly correct about that. Since we dentists are of a mechanical nature the facts must be mechanical to be properly understood, so the object in promulgating this theory was to bring up a condition whereby we might bring it under the head of mechanical forces. I am very much pleased at the discussion brought out by this paper, and I believe, Mr. President, that all the particulars have been covered.

Dr. Taft: Dr. Junkerman assumes that that which I referred to was a layer of partially decomposed dentin, I distinctly stated that it was beneath this layer in such cases I referred to. It is beneath that partially decomposed dentin, after the latter has been cut away, that is so sensitive. Another instance in proof of the fact, take for instance the central incisors, we are all familiar with those spots of extreme sensitiveness, but if you have been a close observer, you know that with a bur or sharp excavator you can cut this away and all sensitiveness is gone.

A Few Suggestions.*

BY L. P. BETHEL, KENT, O.

TO-DAY we meet again in annual session with every indication of another profitable meeting.

During the past few years the Ohio State Dental Society has received a great impetus through the faithful work of its members and there is no reason why this society should not continue one of the best in America. We have among its members the requisite talent, energy and disposition. Harmony, willingness, on the part of every member to do his duty, and faithful work, are the essentials for its maintenance.

THE YOUNG MEN.

We have been impressed with the numbers of young men coming into our society. Welcome them; give them encouragement; set them to work, for they are the ones upon whom the perpetuation of the society depends.

LOCAL DENTAL SOCIETIES.

There are a number of very active local dental societies throughout the state and they no doubt have an influence on the state society. They not only benefit every member personally, but they unite men professionally and bring about a union that is most desirable. Let us have more of these organizations.

DENTAL LEGISLATION.

There is great need of better dental legislation in Ohio. The present law is but a poor excuse, wholly inadequate for the demands, and should be remedied. Perhaps no one realizes this fact more fully than the members of the Board of Dental Examiners.

There seems to be nothing in the way of having a good law passed, for there is harmony in the profession and surely every right-minded dentist should be willing to aid its passage.

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* President's remarks at the Ohio State Dental Society, December, 1896.

Other states are ahead of Ohio in this respect and it is hoped that our legislation committee can succeed, this session of the legislature, in securing a just law that will protect both the public and the profession from imposters and detestable quacks.

EXEMPTION FROM JURY DUTY.

While on the subject of legislation, we might mention that another desirable law for dentists, would be that of exemption from jury duty. It is always a great sacrifice and loss to the dentist whenever compelled to serve in this capacity, and like the physician, he should be exempt. His reasons are of the best; they are tangible and should receive recognition by our legislators.

APPOINTMENT OF DENTISTS TO STATE INSTITUTIONS.

The teeth play so important a part in the animal economy their salvation is a matter of great importance for the welfare and health of every individual, and attention should be given the teeth, especially those diseased, as well as to other physical infirmities.

Physicians are appointed by the state for state institutions. Why should not dentists also, be appointed to them?

I understand that steps in this direction have already been taken in Georgia and that a dentist has been appointed to the Georgia Insane Asylum at Macon.

HYGIENE IN THE SCHOOLS.

Dental and oral hygiene should be taught in our public schools, especially in the primary grades.

A year ago the Superintendent of the Cleveland city schools became interested in this matter and a course of instruction in oral hygiene was instituted. From reports it seems to have been a successful effort. The schools of Toledo are about to adopt something of this sort, and smaller places are becoming interested.

It might be well for this society to appoint a standing committee on hygiene, and let them prepare a scheme for instruction and recommend its adoption by teachers in the public schools of the state.

DENTISTS IN THE ARMY AND NAVY.

Another effort will be made to secure appointments of dentists in the army and navy of the United States. Aside from the committee of legislation, the National Dental Association has, by vote, appointed a committee at large consisting of one member of the National Association from each State, to act in conjunction with any state or local committees in furthering this project. As this society has already a committee favoring Corps of Dental Surgeons for the army and navy, I would suggest that this committee be continued and increased if deemed advisable by this body.

SCIENTIFIC WORK—COMMITTEE ON INVESTIGATION.

The importance of proof through investigation, is apparent to every one, and it might stimulate research work if the society had a committee on investigation and research. If several members could conduct a series of experiments along the same lines, and at the following meeting give the comparative results of this search work, it seems to me that great good would come from it. We have many members capable of carrying on such investigations and the results would be beneficial to investigators as well as to the members of the society in general.

COMMITTEE ON RECORDS.

As it is of great importance that all records of this society be complete and that they be properly inscribed, I would suggest a standing committee whose duty it shall be to examine the records each year and see that they are complete.

DENTAL CONGRESS IN 1902.

Some months ago the Toledo Dental Society passed the following resolutions:

WHEREAS, The Ohio Centennial is to be held at Toledo, Ohio, in 1902, and naturally many of our profession will be in attendance; and

WHEREAS, The Toledo Dental Society being at the home of this great enterprise, we should agitate the holding of a Dental Congress some time during the centennial session; therefore be it

Resolved, That our President appoint a committee of three to bring this matter before the next meeting of the Ohio State Dental Society.

I merely call your attention, at the present time, to this matter, hoping that if it be formally presented to this body, you will give it due consideration and take such action as the members deem appropriate.

In conclusion, I will state that I have purposely made this address a short one, desiring mainly to submit these few suggestions to you. The Executive, Clinic and Arrangement committees have worked assiduously and have prepared an excellent program for our meeting. I trust that you will all take active part that the best good may be gotten from the subjects treated.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

Your committee, appointed to report on the suggestions contained in the president's address, beg leave to submit the following:

We most heartily concur in the sentiments of the address as a whole, but would emphasize the importance of certain suggestions therein specified and recommend for immediate action by this body:

First. The appointment by the president of a committee of nine (9) to formulate plans for a Dental Congress to be held in Toledo in 1902, and report at the next annual meeting.

Second. The appointment of a committee of five (5) by the president, of which Dr. W. A. Price shall be chairman, to outline or formulate a system for a course of study in Dental Hygiene, and a method by which it may be introduced into the public schools of the state.

We furthermore recommend, that the appointment of dentists in state institutions and the exemption of dentists from jury duty, be referred to the legislative committee; also the continuation of standing committee on matters pertaining to employment of dentists in the army and navy.

J. R. Owens,
Everett M. Cook,
Otto Arnold.

Amusing Incidents from Practice.

Dr. M. G. Jenison, Los Angeles, California, contributes the following: I once had an elderly gentleman come to me for a full upper and lower denture, whose mouth was constantly changing in shape. He had tried many dentures with only partially satisfactory results. After quite a struggle we thought we had met with success, but when he arose the following morning, he came down and complained to his wife that these teeth were not going to be any better than the others! He was completely discouraged, and was going to give up, but continued to struggle with them during the early morning. Finally he heard his wife calling in her high-pitched voice, "George, what have you done with my teeth?" "Nothing," he replied. "Yes, you have; I really believe you have had them in your own mouth," and after further parleying and investigation, this was just what the unobserving and rather absent-minded old gentleman had done.

Dr. Jenison also writes: When experimenting with pyok tannin, I met with a little accident that was more amusing than many of the mishaps in the dental office. I had injected some of the solution into the antrum, through the socket of the first molar, when the patient suddenly threw his head forward to the cuspidor, to relieve himself of some saliva, and when he put his head back in position, I was somewhat startled to notice that his nose was a beautiful violet color, the solution having passed into the nostrils from the antrum. Appreciating its staining qualities from past experience, I realized I must act quickly to remove it without trouble. I placed a soft rubber polishing point in the engine, dipped it in the polishing powder, and with a few rapid turns on my patient's nose had the violet tip removed before he hardly realized what I was doing.

Dr. E. K. Wedelstaedt, St. Paul, contributes the following: I was very busy sometime ago when I heard the door open and someone entered. From the sound that greeted my ears, I was made aware that a woman was suffering. I left my patient, went into the reception room, and found what I thought. I asked, "Are you in pain?" It was some time before I received an answer. At last the poor woman pulled down the lip on the right side and asked, "Can you full him up?" I looked into her mouth and saw that the lower first molar had a mesial cavity in it, and also that the gum around the tooth was somewhat mutilated. "The cavity can be filled after the teeth have been separated." "Vill you vait two veeks bevore I pay you for him?" she asked. "Yes, that is all right," I said. After the teeth had been separated, an appointment was made, which was kept and the tooth filled. Three days after the woman returned and the filling was polished. When the work was completed she paid for the operation and related the following: "You know dat fellow, Meekey?" "No." "Vell, dem peoples vat live in der next haus by uns dey tell me to go by him for to got dat toot of mine fulled up, und so I vent der. Dot fellow is a good one, he full dot toot seben dimes in der last tree days und den yust before I come by you, he say to me like dis, 'Open yer mout.' He vas behind der chair und so I see not vat he in his hant got. So den I open der mouth und dat fellow he got der instrument in der hant in und he takes one hold on der toot. You bet you, dat I grabs him by der hant und I vont let him pull him out. Den he say by me, 'Vhy for you take me by der hant?' I tells him dot I vants dat toot in mine hed und I don't want him out. Den he say by me, 'Dat toot you no can keep already yet, dat toot he must come out, for dat nerve in dat toot is yust so big dat he beat all dem fillings out yust so fast as I can puts dem in.' I tole him I no care, I vants dot toot to keep him, und den I comes by you right avay, quick. You fix dot nerve dot he now no longer vill give me trouble, hey? He now no longer can beat dot filling vat you put in, out, hey?" She was assured that there would not be any trouble of that kind. I regret to say that this actually took place as it has been stated.

National Dental Association.

HELD AT NIAGARA FALLS, AUG. 1-4, 1899.

(Reported for OHIO DENTAL JOURNAL by Mrs. J. M. Walker.)

(*Concluded from page* 608.)

Reflexes from Lower Molars.

BY JAS. TRUMAN, D.D.S., PHILADELPHIA, PA.

ALTHOUGH the causes of reflex disturbances have been studied in a collateral branch of dental pathology, yet the reflexes of the teeth have received but slight rttention and that mainly confined to infantile dentition. The eruption of the permanent molars has received but slight attention, but this is not to be wondered at as medicine has until very recently underrated, if not entirely ignored the oral cavity as a source of disease; in fact the origin of disease in general has only been studied scientifically within the past twenty-five years and the stndy is yet in its infancy. Effects, not causes, have received attention.

More attention should be given to the eruption of the permanent molars than has been done, as they are responsible, equally with first dentition for serious disturbance along the course of nerve connections. With space sufficient for development pentition would be simply a physiological process. The first duty of the student of the phenomena of dentition is to study the anatomy of the jaw and the process of growth of the jaw primarily—followed by that of the teeth. The primary question being that of space or room for development, the first permanent molar, although the largest of the series, is usually free from necrosis, the only necrosis obstruction to its development being found in the tissue overlying gum. The second molar has a different plan in development more fully exemplifies the importance of room for growth. The growth of the jaw posteriorly carries the germ of these teeth well up into the rami, and as development proceeds there is a gradual descent towards the angle of the jaw. If the growth of the jaw does not progress in harmonious relationship with that of the teeth, serious reflex suffering may be caused. This point is passed at about the ninth year and may give rise to marked cerebral disturbance—

convulsions, epilepsy, otalgia, ocular diseases and other more or less aggravated lesions.

The intelligent practitioner will not fail to examine for obstructed dentition when called on to diagnose a case. Relief must come by affording room for growth—the only remedy is free lancing, which is indicated at all stages of development and should be resorted to as frequently as the symptoms indicate reflex phenomena.

That the third molar is a frequent cause of reflexes is too well known to admit of question and get the books on dental pathology and oral surgery have but little to say in treatment of this subject. Then teeth having this origin in the rami have difficulty in resuming the vertical position. From this oblique or horizontal position reflexes may be produced either by impingement upon the inferior dental nerve, or as more frequently the case, by producing decay at the cervical border of the second molar, eventually pressing upon the pulp of the latter. With the third molar in a horizontal position, impinging upon the distal surface of the second molar, room cannot be secured as long as all the teeth are retained in place. With the X ray as an aid in diagnosis, such malpositions ore now revealed with unerring certainty, but they were formerly not infrequently the source of years of torture.

Relief should not be delayed until the teeth manifest themsemselves, but the lance should be freely used at the first symptoms of reflex disturbance. Especially should the second molars be looked to as the source of serious reflexes about the 9th year.

Prognathism, Extraction and Delay vs. Expansion and Early Attention.

BY DR. R. OTTOLENGUI, NEW YORK.

This paper embraced the history to two cases from practice, which taken together seem to illustrate the mischievousness of certain methods of procedure heretofore considered sound. The cases were both of prognathous upper jaw. In one case the work of regulation was undertaken prior to the eruption of the permanent cuspids. The other case was undertaken when the patient was nearing his fifteenth birthday. When first seen the temporary cuspids were still in place and the first permanent molars had been extracted. Models taken by a previous operator at the age of ten showed a marked resemblance between this case at that age and the case first mentioned, the same teeth being present with the same malposition. In the case undertaken at the the early age mentioned, the jaws were brought into good pose, the teeth in good occlusion, and consequently both internal and external secured without the sacrifice of any of the permanent teeth. The appliances used, at both cases and their application, with the progress and final results were shown by large charts, without which description would be inadequate.

Dental Electricity.

BY L. E. CUSTER, DAYTON, O.

In the presence of the marvels of mechanical and electrical ingenuity contained in the Niagara plant, the time and place are opportune for the consideration of electrical science and dental electricity.

After a brief review of the experiments of Galvanic and Volte, the discoveries of Davy, the work of Oerted and Ampere, Faraday, Narley, Siemens and other electricians, Dr. Custer traced rapidly the progress of electric science in its application to art and science, medicine and surgery, and the advance in dental science due to modern electricity. The field of its useful application in medicine is narrow when compared with dentistry where it is made available in the various forms of power, heat, light and chemism. No energy at our command has made so wide range of action, and is at the same time so easily and so accurately regulated, as electricity. As a source of heat and light it is unequalled for convenience, cleanliness and purity. As As a source of power it is noiseless when properly used. The electrolytic property of the current finds its appreciation in cataphoresis for the treatment of sensitive dentin, for the projection of medicinal agents into the tissues, for lining root canals, and for bleaching teeth.

The X ray has an appropriate place in dental practice as an unequalled means of diagnosis.

These are but slight indications of the part electricity may take in the dental practice of the future.

Physiological Reasons for Supposing that Dentin and Enamel in Pulpless Teeth may be Nourished.

BY JOSEPH HEAD, PHILADELPHIA, PA.

The argument in this paper is based upon a case in which the slightest systemic derangement was often followed by obstinate pulp congestion.

Other methods of treatment failing to afford relief, the pulp was necessarily removed from the left upper first permanent molar and the first and second upper bicuspids, all of the canals being filled with oxychlorid of zinc. Six months later these teeth responded to the application of heat, the pain being most intense in the first molar. On opening the tooth it was found that the zinc filling had become liquefied and that the entire dentin had taken on such inflammation that the patient could not bear to have it touched. This was brought under control by daily applications of chlorid of zinc, when the canals were again filled, but the tooth remained sensitive to heat for six months longer. It gradually diminished after that time and the patient finally obtained complete relief.

The dentin having remained sensitive and apparently alive for over a year and a half after the removal of the pulp, proves that there are means of sensitory communication and avenues of nourishment, independent of the pulp.

Admitting that the dentin is nourished by osmosis through the lucunæ of the cementum nerve communication between the dentine and cementum has never been proved, but the microscope has probably not yet found the half of what it is destined to find, and it is easier to believe that the microscope has overlooked minute sensitory plasma than to believe that sensitory impulses are carried on by a Marconi-like system of transmission. Since the dentin can be thus nourished, why not the enamel also? Why should not the phosphate of calcium, or some kindred salt, percolating through the tooth, gradually modify the density of the enamel rods or their sheaths? Excavating shows that the enamel of five years is less hard than the enamel of forty years, observation proves that the enamel grows harder for years—long after the enamel organ has been destroyed.

When we consider how frequently the enamel is known to change its color from permeation by blood-plasma charged with broken-down homoglobin, not only the possibility but the probability of enamel nutrition, by osmosis, is forced upon our consideration.

The True Status of Pulpless Teeth.

BY DR. D. D. SMITH, PHILADELPHIA, PA.

The pulpless tooth sustains unique relations, being a living organ with the greater portion of its substance dead matter. The utility of a tooth is wholly dependant upon its attachment upon the alveolus—a vital, living union, partially if not wholly independent of the pulp. The value of a pulpless tooth lets in the fact that there is a source of nutrition maintained independently of pulp action. With the death of the pulp there is death of the whole crown of the tooth; the enamel and dentin are left absolutely without sensitive or nutritive function, but the vitality of the root, except in its dentin, is not interrupted or lessened. The cementum with its membrane is therefore the most important tissue for the conservation of the tooth. Pulp endowment, in so far as it affects healthful union between root and alveolus, might be dispensed with without detriment. Extraction destroys the life of the cementum and the periosteum; denuding the root of cementum, deprives it of the only tissue through which restoration to vital union is possible. Extraction and replacement are physiologically incompatible with the office of the tissues involved. The root portion of an undisturbed pulpless tooth is a vital, living organ, exercising its functions as when the pulp distributed sensation and nutrition to the dentine and enamel. Complete removal of the devitalized pulp tissue, with proper disinfection of the tubules and inter tubular matter does interfere with uninterrupted continuation of the normal functions of the tissues which furnish vital attachment between root and alveolus.

A noticeably frequent result of pulp destruction is a closer, firmer union of root and alveolus, due to an increased tendency to deposits of cemental tissue on the surface of the root. The removal of the pulp in the beginning of pyorrhea alveolaris is attended with most satisfactory results. With our present methods of crown-restoration, the condition of the is of little importance; the root should always form the basis of judgment and diagnosis, as upon that depends the permanent comfort and retention of the tooth. The root which has uninjured pericemental connection, never questions whether the crown it supports is natural or artificial. In dealing with pulpless root devoid of natural crown, there should be free removal of the dentine from thickest portion of the root, care being exercised not to touch upon the cementum and to leave the apical third practically undisturbed. Crowns having the appearance of the natural organ can be securely affixed to any root having the alveolo dental articulation in a normal physiological condition.

The Physiological Relation of the Dental Pulp to the Economy

BY DR. CHAS. L. HUNGERFORD, KANSAS CITY, MO.

The dental pulp is a constructive organ, temporarily associated with the economy for the purpose of forming dentin. While a tooth is distinctly a dermal product, it is a differentiation of that derma that gives rise to the three membranes that produce respectively enamel, dentin and cement, each of which grows at the expense of the organ from which it derived its origin, maintaining its existence independently of that organ in exact ratio to that organ's maintaining or losing its organic functions. The entire enamel membrane is used up by the forming enamel; the dentine serves no other purpose than to support the enamel shield on the outside and connect it to the more vital cement underneath, but physiologically independent of either. Cut off the crown of the tooth; drill out the dentine to the very apex of the root—the cement still lives and thrives even better than it did before, added force being given to the still active functioning tissue—the periosteum. A human tooth does not depend for its physiological relationship with the economy or either the dentin or the enamel, for neither comes in contact with the economy, and after the removal of the dentin, enamel and pulp, there is no impairment of the functions of the remaining dental tissues, viz., the cement, periosteum and alveolar process. The dental follicle having grown enough dentin to give stability, has performed all the physiological function of which it is capable; any further functioning is of an abnormal character, and is followed by disintegration and pain.

In the discussion of the papers Dr. M. L. Rhein spoke in advocacy of the advantages obtained by the removal of the pulps of mature teeth when exposed by decay, and depicted the evils resulting from indiscriminate efforts to save the pulps of all teeth. He spoke of the valuable work of Dr. Fletcher of Cincinnati, in his studies of the pericemental membrane, and the importance of the conservation of this portion of the dental organization.

Dr. G. V. Black said that the peridental membrane had not received the close and careful study it demands. The nature of the membrane is not generally understood, especially the glands which occupy a position in this membrane, but which are ignored by the generality of the profession. The cementum itself is not yet well understood. It is a continually growing body; thin in young teeth, becoming thicker as the tooth is older; it is liable to extraneous growths which may occur at any age, but generally after adult age. The subject of detachment and reattachment of the peridental membrane should be studied, especially by those engaged in moving the teeth, in which process the fibres are severely stretched, or entirely detached, either from the alveolar wall or from the cementum and reattached by the laying down of new cemental matter or the space occupied by the formation of new bone cells.

[Dr. ? Does the absorption take place from the cementum or from the bone?]

Dr. Black: The absorption of calcified tissue is from the alveolus principally though it may be from the cementum also. When conditions are not favorable there will be absorption instead of reattachment and the tooth will be lost.

A tooth may very perfectly retain its health and vigor after the removal of the pulp, and its removal is justifiable in many cases. But the question arises--is a pulpless tooth as good as if the pulp was alive and healthy? I answer emphatically No! In one sense surgery is always an interference with nature, but in many cases the only way open is to remove the pulp, but the later in life it is done the better it is for the tooth. In every case where a tooth-pulp is destroyed there is a retrograde change in the dentin, it is not up to its normal strength after the lapse of time. Complete death of the dentin takes place after the removal of the pulp, though there is osmosis through the dentin that influences the integrity of the tooth. If the dentinal tubules are open to the saliva we have a retrograde action, but if the tubules are not open for the saliva to flow in then the osmosis is through the cementum to the dentin, which tends towards its integrity. Injury is often done by the chemical action of so-called remedies stuffed into cavities. Nothing should be permitted to enter the cavity when it has become necessary to devitalize the pulp, but what is placed there by design and with a purpose. Seal it up and prevent the entrance of saliva.

Don't destroy the pulp in the teeth of children. The pulp is large; the apical foramen is large and open, and you will not get the same results that you do in adult teeth. If a pulp is removed from a tooth when it is young, it will not stand the wear of a long life.

ALL SORTS

A Method of Making a Bicuspid or Molar Porcelain Crown.*

BY DR. B. L. THORPE, ST. LOUIS, MO.

Make the band of 28-gauge platinum and the diaphram of 30-gauge platinum, using a 14-gauge square or three-cornered iridio-platinum post, using *pure* gold for all the soldering.

The post is allowed to extend through the diaphram with the cap and post soldered and fitted to the tooth; a bite is taken in modeling compound to get the compound to adapt itself closely to the lingual surface of gum and tooth. Take a common bone coat button, tie a string to it and place on the surface of the warmed modelling compound that comes in contact with the lingual surface. Have the patient bite. While the jaws are closed, pull the string, drawing the compound well against the surface with the button.

Before mounting on the articulator, flow a thin layer of hot wax over pin and inner surface of cap, thus allowing the easy removal of same from plaster cast. Articulate the bite. Select a "saddle-back" facing or ordinary rubber plate tooth of desired size and shade, grind to fit the cap, work to position and invest in marble dust and plaster, boil out wax, bend pins over post, place over Bunsen burner, dry out thoroughly and solder with *pure* gold. No flux needed.

After cooling, place in acid and wash in water. The next step is to body and bake, using care to absorb all moisture from the body.

If carefully done, the finished case presents an artistic piece of work in harmony with nature and possessing strength and durability.

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*Extract from Mo. Society proceedings in Western Dental Journal.

Unique Method of Making a Matrix for Porcelain Fillings.*

BY DR. F. T. VAN WOERT, BROOKLYN, N. Y.

I have been able to obtain platina rolled to the two thousandth part of an inch. By annealing this in an electric furnace *over slacked lime,* one obtains such ductility that he can manipulate it wherever he would usually use pure gold, and thus can use higher fusing bodies and obtain better results.

The method of making the matrix is to form some modelling compound into a pencil with a pointed end, warm the point and press it into the prepared cavity to obtain an impression. Cool this, *slightly* warm another piece of compound and press impression into this, then a die and counterdie of modelling compound are *quickly* made. The platina is so soft and ductile that one can actually swage it with these dies. Then when placed in the cavity the matrix fits so nearly that further burnishing to completely adapt it is not likely to tear holes in it. We have since seen some platina recently put on the market, supposed to be the *five-thousandths* of an inch in thickness. Dr. Van Woert also spoke of having used *hydrofluoric acid* to *etch* the surface of the inlay so that the cement sticks to it much better than to the glossy, smooth surface. By coating that portion of the inlay on which it is desired to retain the smooth, glossy surface with wax, the acid is readily applied.

How to Make a Porcelain Crown with Gum Extension.†

BY DR. J. S. LETORD.

A cap made of platinum is soldered with 24-karat plate gold, after the manner of a cap for a Richmond. A dowel pin is fitted in the cap, allowing it to project some little distance into what is ultimately to be the crown portion of the tooth. This projection is left for the double purpose of holding a porcelain facing in position, which is done by bending the facing pins against the dowel pin, and of giving attachment to the "body," to be added. When the facing is properly secured in position, "body" is built up behind it and the first baking given. More body is then added, carved to the proper contour, and the whole baked again. This gives a crown such as is ordinarily required, and one that closely resembles a banded Logan in appearance. But, for purposes of illustration, suppose that the gingival tissues about the root where the crown is to go, are badly receded so as to expose a considerable width of platinum.

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*Condensed from N. Y. correspondence in Dental Review.

†Extract from Mo. Society proceedings in Western Dental Journal.

To disguise the band and at the same time to give a natural appearance to the gums, the labial surface of the band is covered with gum enamel, carved, and the tooth baked a third time. A crown thus constructed can be made to hide a considerable loss of gum.

Fitting Rubber Plates.*

BY W. E. DRISCOLL, MANATEE, FLORIDA.

It is doubtful if even a very small percentage of the dental profession realizes the tendency of rubber plates to balance or rock from undue pressure in the ceneral portion of the palate. I shave away from all the palatal part of the impression except a narrow space at the extreme posterior part, that have any upward bearing to fully the depth of the thickness of a ten cent silver coin, lessening the depth outward from the center till it is finished with no offset at the edges, as in the common air chamber After having cut away the impression as above described, I have had to trim the plate when tried in the mouth fully as much more as the impression had been trimed in the same place. By examining the palate we may decide approximately how much to trim the central part of the impression. If the palate is hard more trimming will be found necessary than when there is some flexibility. However, before trimming away the central part it is best to deepen the grooves made in the impression by the ruga nearly as much as the deepest cutting in the center of the palate. After the grooves, made by the ruga, are carefully deepened it is also best to scrape away a small portion from the parts between the ruga grooves. Just inside the tuberosity of the gums on each side is generally a space varying in shape and about the size of a half dime, that can be variably compressed. Hence, if the plaster model is trimmed at these points, the plate will adhere much better than if it is neglected. Most of the rubber plates I see are left with edges too sharp. Intelligent patrons will express great satisfaction with plates that have been carefully smoothed at all parts that touch the gums, and especially so if they have had experience with the other kind. Plates that have been worn till the ridges shrink, often need the rims trimmed down, also the unequal pressure in the center of the palate relieved by trimming, as already described.

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* Extract from Welch's Dental Magazine

BRIEFS.

[Condensed from Contemporaneous Literature for OHIO DENTAL JOURNAL.]

To Hasten Setting of Cement. A sparing amount of powdered borax added to the cement mixture will cause the latter to set quickly, and give a hard and more tenacious cement product. —*B. J. Cigrand, Review.*

Spittoon Disinfection. If fountain spittoons are not employed, then the reservoirs of both ejectors and spittoons should be daily disinfected by means of a strong solution of permanganate of potash. —*W. A. Knowles, Pac. Med. Dent. Gaz.*

Cocain Solvents. Extract of hammamelis, Listerine and Pasteurine are all good solvents of cocain, and meet all the requirements of a clear menstruum. Preparations sixty days old seem to be as good as when first made up.—*O. B. Love, Texas Dental Journal.*

Silver Lactate in the Treatment of Pyorrhea Alveolaris. Silver lactate (actol), Dr. Harlan says, will destroy within five minutes all pathogenic microbes. He has used it in suppurating pockets along the sides of roots of teeth with excellent results. It does not cause pain when used up to 20 per cent.

Method of Contouring Buccal Surfaces of Gold Crowns. Mr. W. F. Flote showed an original method of contouring the buccal surfaces of gold crowns. He had a brass block stamped with a large number of impressions of buccal surfaces, and the gold strip was punched into the depression that suited the case in hand.—*Dental Record.*

For Hypersensitiveness in Shallow Cervical Cavities. Dry the cavity and apply a mixture of equal parts of deliquesced caustic soda and carbolic acid. The caustic soda must have deliquesced in the open air without the addition of water. Carefully protect the soft parts, and wash off the tooth after the application has been made.—*Robert Huey, Penn. Dental Journal.*

Do not use Flat-Nosed Pliers in Bending Wire Clasps. Let me warn you in bending up wire clasps, against the use of flat-nosed pliers you cut into it, and by breaking the continuity of the metal, weaken it at the point where it should be strongest. The first bend the clasp takes round the tooth should be its strong point; therefore, in filing up, be careful not to dig your file into the wire at this point.—*J. C. Cameron, Brit. Jour.*

Pads for Rubber-Dam Holders.—Little pads of bibulous paper should be placed under the rubber-dam spreaders, thus preventing them coming in contact with the patient's skin, and accomplishing two purposes—freedom from liability to transmit skin diseases, and the prevention of those disfiguring little wrinkles which the metal of the spreaders often produces, and which is especially objectionable to lady patients.—*W. A. Knowles, Pac. Med. Dent. Gaz.*

A Methed of Applying Vapocaine for Relief of Sensitive Dentine.—A method we have employed successfully is to seal the pellet of cotton saturated with vapocaine in the cavity by pressing a piece of warmed base plate wax over the tooth to be operated upon, and the adjoining teeth if necessary. This prevents the evaporation of the vapocaine to a certain extent, and apparently increases its penetration into the dentine.—*Editor Med. Dental Gazette.*

Drawing the Temper of Swiss Pivot Broaches. Briefly, the method of drawing the temper is to lay some fine asbestos on a sheet of zinc, place a quantity of broaches on the asbestos, place it over any convenient heating apparatus, and heat slowly for perhaps an hour, possibly getting the heat up to a dull red glow, then allowing them to cool slowly in the asbestos until perfectly cold. The instruments are then *uniform* in temper, or softness, as one pleases to call it.—*J. G. Palmer, Review.*

To Preserve Formaldehyde. In view of the widely increasing use of this substance, the following suggestions are offered in *Lilly's Bulletin* for its preservation. Formaldehyde is a gas, and its saturated aqueous solution is 40 per cent. In order to hold its strength it should be kept cool and at an equal temperature. Being an aqueous solution it should not be exposed to freezing temperatures. At low temperatures it becomes polymerized, causing a thickening of the liquid, due to a separation of the polymer.

True Cutting of a Bur is Not Augmented by Pressure, even while cutting enamel. A crushing or pulverization of the tooth structure ensues, which may prove an element in the subsequent failure of the operation. Because a sharp bur will not penetrate enamel quickly is not a good reason why force should be exerted; a revolving instrument, especially when enlarging a cavity, acts as a wedge, and with the pressure is liable so cause fracture of the enamel. Especially is this true in the fissure of a bicuspid weakened by caries.—*L. G. LeRoy, in Items*

A New Way of Fitting a Logan Crown. The tooth is roughly fitted to the prepared root, over which a diaphram of thin platinum has been burnished. Some gum body is then put below the artificial tooth around the pin, and the tooth pushed up into the position required in the root, the excess being squeezed out and removed. The tooth on being removed brings away with it the diaphram which adheres to the moist gum body. This is then baked in an electric furnace and the platinum being peeled off the tooth fits accurately to the root.—*W. E. Fletcher, Dental Record.*

Care in Use of Carborundum on Porcelain after First Fusing.—If you have occasion to grind the porcelain crown with carborundum or any of the abrasive wheels after the first fusing, they should be used dry, the dust blown out of pores of porcelain, and the surface carefully dressed down with sandpaper and cuttlefish discs. If this precaution is not followed there will be a spot of discoloration on the porcelain body at that point after the second fusing. This discoloration is said to be due to the oxid of aluminum, which is one of the components of carborundum.—*J. E. Nyman, Dental Digest.*

Do Not Use Too Large a Reamer for Root Canals where a Logan Crown is to be Applied.—In using the Ottolengui canal reamers, it is a mistake to apply a large one and produce a large circular opening into the root to receive the Logan post. Choose a small reamer and by giving it an anterio-posterior movement you are enabled to cut an opening of an elliptical character, and you leave the root structure thick at its lateral sides, where the major strain falls, and where the root must of necessity be the strongest. Further, this rhomboidal opening allows the Logan post to tightly hug the walls of the root canal and thus afford additional anchorage to the crown.—*B. J. Cigrand, Review.*

Treatment of Cracked Porcelains.—Occasionally a minute crack will be found in the porcelain facing after the crown has been completed, and while it quite ruins the artistic effect, the crown is not materially weakened. This crack may be readily disposed of by drying the crown thoroughly with alcohol and dropping it in liquid albolene, allowing it to remain there about five minutes. It is then removed, washed with soap and water, dried with alcohol, and no trace of the crack can be seen. The liquid albolene is of such thin consistency that it readily penetrates the fine crevice, and under the moist conditions of the mouth will never be evaporated.—*J. E. Nyman, Dental Digest.*

The Use of Binding Wire in the Application of the Rubber-Dam.—When I first commenced using wire for this purpose I tried pure gold wire, then platina wire, and finally iron-binding wire, well-annealed; in many cases I found the single wire failed to hold the rubber securely, the dam having a tendency to roll over the wire. I then took a gauge of wire about one-half the size of the single wire, doubling it and twisting it carefully so as to make as perfect a twist as possible – see enclosed sample; this I found worked admirably, and have many times succeeded in controlling difficult cases where I am sure it would have been practically impossible by any other known means. *W. Mitchell, Jour. Brit. D. Association.*

Use Distilled Water in Mixing Porcelain Body, especially if the water supply be fed by a spring, as there are generally minerals in solution which will be very apt to discolor the porcelain body. All the coloring materials used in tinting porcelain are metals or rather metallic oxids. The workbench should be carefully dusted off with a damp cloth before putting on the porcelain body. The fine gold and platinum fillings scattered about every dental bench usually contain some minute particles of iron from the file. This dust, if mixed with the porcelain body, will discolor it red or blue-gray, as it is gold and iron or platinum that predominates in the fillings. Covers should be placed over the work if left for a few moments.—*J. E. Nyman, Dental Digest.*

Cast Plates.—In case of breakage of teeth cast to plate they may be replaced readily by filing undercuts or dovetails, and attaching with vulcanite. While I use and advocate vulcanite attachment of teeth in all full cases, and a large per centage of partial ones, yet I often cast direct to porcelain, it being desirable in many cases to be able to do so. It has been charged that the pins of teeth are affected by contact with the moulten alloy, that they become disintegrated, and weakened to an extent which makes possible the easy breaking away of the porcelain This charge so long as I followed the custom of heating my flask to the fusing point of the alloy, was true: but I have discovered that if I avoid heating my case too highly this result does not occur.—*R. C. Brophy. Review.*

Epithelioma supposed to be Due to the Use of Bloody Forceps in Extracting a Tooth.—Dr. G. Lenox Curtis, in *Items*, cites the following case, which shows the importance of sterilization: A patient came to me with epithelioma involving the entire right maxilla. The history of the case was that about six months prior to that he had occasion to have a loose tooth extracted. When the dentist picked up the instrument the patient saw it was covered with blood, and held out his hand, but before he had a chance to catch the instrument or prevent the dentist from putting it into his mouth, it was slipped in and the tooth out. About two weeks afterward he found a soreness in his mouth, and from that day the growth of the cancer was noticeable, until he lost the jaw in consequence of this dirty work.

Dangers of Hydrogen Peroxid as a Surgical Antiseptic. G. U. Spencer sounds a note of warning in the *Therapeutic Gazette*, against the use of hydrogen peroxid as a disinfectant far wounds in certain localities. He cites numerous cases, both in his own experience and in that of others, in which the employment of the solution appears to cause the spread of pus-producing bacteria to other parts. This is due to the passage of bubbles of the gas evolved from the agent, which possesses the power of traveling through relaxed tissue, along nerves, in the tendon sheath, and in the planes of the muscles, and thus carry infection with them. For this reason it is unsafe to use it for abscess cavities, or in the washing out of infectious wounds, also in the tissues surrounding the larynx and trachea, especially in young children.

Treatment of Chronic Alveolar Abscess.—Open into the teeth to give free vent to the escape of pus and gases. Wash out with peroxide, or five per cent pyrozone, and follow the treatment in the canals with that most valuable remedy—three per cent. crystals of iodine dissolved in creosote. Lance to the bottom of the abscess sac and prevent this from healing by packing with iodoform moist gauze, ten per cent., and follow up by giving one of the saline cathartics. If the patient is anemic, I usually give a tonic of

℞ Tinct. ferri chloridi . . oz. j.
Quinia sulphate . . . dram j.
Sig. Fifteen drops in water four times a day.

—*F. F. Pfaff, Dental Review.*

Recession of Gum from Grinding down a Tooth for Crown. Dr. Moore reported a case where extreme recession of the gum followed the grinding down of a lateral incisor for a Logan crown. Whether arsenic had been used in devitalizing the pulp and a sufficient quantity was left in the tooth to cause sloughing, he did not know: but as the tooth had not been treated, unless a small hole drilled into the pulp chamber very high up under the gum, could be called treatment, he could think of nothing else as being a likely cause. However, the condition was there, and he asked if anyone could suggest a possible amelioration.

Dr. Nase suggested that he make an incision horizontally, and putting a stitch in the part of the gum below the incision, draw it down and tie it to the tooth. The idea was to have the gap fill in with granulations. *Dominion Dental Journal.*

Combination Fillings.—My experience with zinc (cement) and amalgam mixed together is that the zinc will wear out and leave the amalgam prominent, thus giving a rough surface to the filling.

One-third amalgam and two-thirds zinc (cement) will cause a tooth with deep decay to become much discolored, just what we should avoid in the bicuspids or any of the anterior teeth.

My experience has led me to mix the zinc (cement) and line the cavity well with it, and while plastic press the amalgam into it, clearing the edges so that the zinc will come well to the edge, but so as to be well covered with amalgam. If nicely done, we have no more discoloration than with all zinc. We have the zinc protected from the moisture, and little or no trouble with the edges of our fillings. The zinc becomes a great protection to further decay because of its firmness should moisture pass by the amalgam.—*T. S. Seeley*, in *Items*.

Close and Accurate Fitting Desirable. In all work that is to be soldered, whether plate work, crown work, bridge work, or regulating appliances, it is of the utmost importance that *close and accurate fitting* of the parts, which are to be united with the solder, be made. To attempt to make the solder *bridge a space* only results in vexatious attempts, while such an attempt may result in drawing the parts away from each other, and changing the position they should occupy when the solder cools. *Close fitting and little solder* is a good rule.

Buttress Teeth Should be Parallel. -When a tooth is to be used as a buttress on which a gold crown is to be fitted, the distal and mesial surfaces, as well as the swells noticed on the palatal and labial aspects of upper bicuspids and molars, should be ground so as to render all these parts *parallel*.

We have found it beneficial, before reducing these teeth for buttresses, to wrap a piece of thread or ligature silk several times around the tooth at its neck, and let it go for twenty-four hours. This manipulation will cause an absorption of the gum at its neck, where a sudden dip is frequently observed, and will be a valuable guide in grinding the tooth to a proper shape for the crown which is to be fitted to it.

Best that Crowns come away in the Impression. In taking the impressions with the buttress crowns in place, it is always best that these crowns *come away in the impression*. This will indicate that the delivery is easy, so that when the case is finished it will go into place with facility. If the crowns do not come away in the impression, it indicates either that the crowns fit the buttress teeth very tight, or that there is an inclination of the tooth, such as to offer an impediment in the withdrawal This should be looked into *at once*, as it will be easier to rectify at this stage than when the case is finished. If this be not seen to there will be difficulty in placing the bridge in position when finished. Bridge-work *must* be done with great exactness, otherwise it will be disappointing.

CORRESPONDENCE.

The Chicago College and Wisconsin Dental Board Litigation at an End.

TO THE EDITOR OHIO DENTAL JOURNAL:

IT is well known to the members of the dental profession, especially those interested in dental education, that in April, 1899, the Wisconsin Board of Dental Examiners refused to register diplomas from the Chicago dental colleges, and other schools, as the law provides. The provision of the law is that the board shall at all times issue a license to any regular graduate of any reputable, legally incorporated dental college, without examination, upon the payment of the registration fee. After making inquiry of the secretary of the board as to the reason why the diploma of his client was not registered, Attorney Quarles who had been retained in the case, received the following reply:

"MILWAUKEE, April 15, 1899.

HON. J. V. QUARLES, Milwaukee, Wis.

DEAR SIR: —I am authorized to say from instructions received from a member of the committee on colleges of the National Board of Dental Examiners, that if the college you represent accepts all the rules as laid down by the National Board of Dental Examiners, in regular form through that body, that this Board will, upon the receipt of such knowledge, issue licenses to regular graduates of said college.

[Signed] W. H. CARSON, Sec'y."

After receiving the above letter, Dr. P. T. Diamond, a graduate of the Chicago College of Dental Surgery, brought mandamus proceedings to compel the board to accept his diploma. The board moved to quash the proceedings, which motion was denied by the court in a vigorous decision handed down by Judge Sutherland, of the Superior Court of Milwaukee County, Wisconsin. Summing up the case, in regard to the standing of the college, the Judge makes use of the following language:

"The relation in this case shows that among intelligent men, whether members of the dental profession or not, the Chicago College of Dental Surgery must be regarded as a reputable institution. . . . Therefore, without difficulty the Court reaches the conclusion that the motion to quash the mandamus proceedings must be denied."

The action of the board was based on the ground that those schools refused to subscribe to a rule passed by the National Association of Dental Examiners, regarding the preliminary educational qualifications of students, the colleges giving as a reason. their unwillingness to accept the interference of the boards in a matter which was outside of their proper function.

The National Association of Dental Examiners, of which the Wisconsin Board was a member, at their meeting at Niagara Falls, in August, 1899, rescinded the rule which was the cause of the controversy, and passed a resolution adopting, in substance, the rule governing preliminary educational qualifications of students which was adopted in 1898 by the National Association of Dental Faculties, and it was hoped that henceforth the two national bodies would work in concert and harmony.

In adopting this resolution the National Association of Dental Examiners recommended to the various state boards that all the schools belonging to the National Association of Dental Faculties be placed on the recognized list, and that the graduates of these schools be licensed, and that all litigation cease. In all states where difficulties had arisen regarding the registration of diplomas of graduates of schools belonging to the National Association of Dental Faculties, the trouble was at once terminated and license issued, except in the State of Wisconsin.

The representative from the Wisconsin board pledged himself at Niagara Falls to return home and do all in his power to terminate the litigation. The week following the National Association meeting, the Wisconsin Board, with their attorney, met by appointment the representatives of the Chicago College of Dental Surgery and the plaintiff in the case against the board with his attorney, and after a conference the representative of the board informed the representatives of the college that the members of the board had voted *unanimously* to continue the litigation.

On August 13, 1899, the following letter was written by Senator J. V. Quarles, attorney for the complainant to Dr. T. W Brophy, Dean of the Chicago College of Dental Surgery:

MILWAUKEE, Wis., Aug. 13, 1899.

DR. T. W. BROPHY, No. 125 State St., Chicago, Ill.

DEAR DOCTOR:—As you are aware a meeting of the State

Board of Dental Examiners took place yesterday in this city, for the ostensible purpose of carrying out the recommendation of the National Board so explicitly made at the meeting at Niagara Falls. Nothing could be more plain and explicit than the recommendations of such National Association, which ought to be looked upon as a command by members thereof.

I have to report, however, that our State Board have assumed to be wiser than the national organization and have positively declined to follow or respect the mandate of the central body. The State Board refuses to recognize the diplomos of your college and all others similarly situated, and leaves no course open but to continue the litigation. We shall, therefore, unless ordered to the contrary, embrace the first opportunity to crowd the case to a final hearing and allow the National Board to deal with its recalcitrent members.

Very respectfully yours,

[Signed,] QUARLES, SPENCE & QUARLES."

Preparations were then made for a vigorous prosecution of the case. The law committee of the National Association of Dental Faculties; which was created at the Niagara Falls meeting, in August, 1899, for the purpose of taking charge of the litigation, as well as any other litigation involving the Association or any college holding membership therein; held a meeting in Chicago, October 14, 1899, and after Drs. Barrett and Morgan of the committee held a conference with the members of the Wisconsin State Board, the latter agreed to license graduates of the Chicago colleges and all schools belonging to the National Association of Dental Faculties. November 6th the agreement was consummated. November 7th the following letter was received by the Dean of the Chicago College of Dental Surgery

"MILWAUKEE, WIS., NOV. 7, 1899.

DR. T. W. BROPHY, Chicago, Ill.

After great tribulation, regarding matters of detail, I am glad to report to you that the Board has finally decided to conform with the provisions of the dental law of Wisconsin, abide by the ruling of the National Association of Dental Examiners and license Chicago graduates and all other graduates from schools holding membership in the National Association of Dental Faculties; thus admitting that, in their action in refusing to license these graduates from April 11th to November 6th, 1899, they were in the wrong. Everything, consequently, in the Diamond mandamus case has been brought to a satisfactory conclusion.

The injustice the Wisconsin Statn Board of Dental Examiners has done your graduates, yourself and the many schools involved, cannot be easily forgotten, but our success in securing all we contended for is an assurance of the justice of our cause.

Dr. Diamond's license has been issued on our assurance that he would discontinue the case. The stipulation to withdraw the suit has been signed by both parties, the whole matter is closed up and the litigation is a thing of the past.

Yours truly,

QUARLES, SPENCE & QUARLES.

A. O. HUNT, W. C. BARRETT, HENRY W. MORGAN,
Law Committee of the National Association of Dental Faculties.
Nov. 22, 1899.

Corrections.

IN the December issue, page 580, first line after "16 candle power lamp," the words "substituting in its place one of 32 candle-power," should be inserted.

DR. FLETCHER's article, page 582, twenty-second line, should read: "The powder contains seventeen and a half per cent. of sodium borate, and seven and a half per cent. of potassium chlorate."

Obituary.

DR. B. H. CATCHING.

IT was with deep regret that we learned of the death of DR. CATCHING, which occurred at his home in Atlanta, Ga., November 23, 1899. He was 51 years of age. The direct cause of death was apoplexy, but the real cause is supposed to have been a general prostration of the nervous system from over work. Dr. Catching was well and favorably known in the profession as an able editor, writer and dentist. He founded the *Southern Dental Journal* and continued its editor for eight years. He then began the publication of *Catching's Compendium of Dentistry*, well known to the profession, and continued this for five years, merging it into the *American Dental Weekly*, which he edited and published two years, when, from an attack of nervous prostration, he was obliged to give up his literary work. He was a member of many of the leading dental societies, an ex-president of the Southern Dental Association, and an ex-member of the Board of Dental Examiners of Georgia. In addition to his professional duties he found time for much earnest religious work, and was for many years and until the time of his death a superintendent of a Sunday-school.

He leaves a wife and four children, the youngest of which is nine years, with whom we condole in this hour of sorrow.

SOCIETIES.

The Ohio State Dental Society Meeting.

THE meeting just held was one of the best in the history of the society. The papers and demonstrations were excellent, and the many clinics enjoyed by all.

The executive, clinic and arrangement committees deserve great credit for their efficient work, for the success of the meeting can be attributed to it.

The officers elected for the ensuing year are:

President, L. L. Barber, Toledo; 1st Vice-Pres., H. F. Harvey, Cleveland; 2nd Vice-Pres., Otto Arnold, Columbus; Secretary, S. D. Ruggles, Portsmouth; Treasurer, C. I. Kelly, Hamilton.

COMMITTEES ARE AS FOLLOWS:

Board of Directors.—3 years—J. R. Callahan, O. N. Heise, Henry Barnes, E. D. Scheble.

Executive Committee.—Henry Barnes, H. T. Smith, Chas. Welch, L. P. Bethel.

Committee on Arrangements.—W. H. Todd, Otto Arnold, A. F. Emminger.

Clinic Committee.—G. H. Wilson, H. C. Brown, E. D. Scheble W. S. Locke.

Publication Committee.—L. P. Bethel, J. K. Smith, W. T. Born, W. T. McLean.

Membership Committee.—J. R. Callahan, Grant Molyneaux, O. N. Heise, L. T. Canfield.

Dental Legislation.—A. F. Emminger, J. R. Callahan, M. H. Fletcher, O. N. Heise, G. H. Wilson.

Army and Navy.—Otto Arnold.

History.—J. Taft, C. R. Butler, C. I. Keely.

Hygiene for Public Schools.—W. A. Price, J. Taft, W. H. Todd, L. P. Bethel, L. L. Barber.

Wisconsin State Board of Dental Examiners.

THE next meeting of this Board for examination will be held at the Hotel Pfister, Milwaukee, on Tuesday, January 16, 1900, commencing at 9 A. M. All examinations are conducted in writing in the English language. A practical demonstration in operative dentistry is also required, for which applicants will be required to furnish their own instruments and patients.

W. H. CARSON, *Sec'y*,
609 Goldsmith Bldg., Milwaukee, Wis.

OUR AFTERMATH.

DR. J. LEON WILLIAMS SUSPENDS ACTIVE EDITORIAL WORK.—This, we understand, is on account of ill-health, for which we are exceedingly sorry Dr. Williams' work has greatly improved *The Dentist*, and it is hoped that he may again take to the tripod in the near future.

DR. J. TAFT RETIRES FROM JOURNALISM.—After a continuous service of forty-four years in the editorial harness, Dr. Taft retires from dental journalism. He has sold the *Dental Register* to Dr. Theo. Menges, of Chicago, but for the present it will be published in Cincinnati, as heretofore, and it is intimated Dr. N. S. Hoff, of Ann Arbor, will be the editor. While we shall miss Dr. Taft from the editorial ranks, we most cordially welcome Brother Hoff, who is eminently fitted for the work.

MR. H. Q. ALTENBERG RETIRES FROM THE RANSOM & RANDOLPH COMPANY.

Mr. Altenberg, who has been identified so long with the dental profession of Ohio and Indiana, that we can hardly refrain from prefixing "doctor" to his name, severed his connection January 1st with The Ransom & Randolph Co., and entered a new field, the extracting of medicinal properties of herbs, roots, etc., for large manufacturers of medicines. We bespeak for Mr. Altenberg the best of success in his new undertaking.

Mr. H. E. Hade, in connection with his own territory, will cover the territory formerly covered by Mr. Altenberg as a salesman. The Ransom & Randolph Co. could obtain no better posted, nor more popular man, to take up the work of Mr. Altenberg, and his success as agent for the company mentioned is a foregone conclusion.

BEWARE OF UNAUTHORIZED DENTAL JOURNAL SOLICITORS. Several complaints have been made and here is another that was sent us recently: A young man calling himself Dr Edward Chipman, and claiming to represent this company, is calling upon dentists soliciting subscriptions to *Welch's Dental Magazine* and *The Dental Century*. Should he call upon you, you will confer a favor upon us by either turning him over to the police of your city or by notifying us by telegraph immediately. THE DENTAL CENTURY COMPANY, Madison, Wis.

NUMBER OF DENTISTS IN GERMANY. The *British Medical Journal* states that official statistics for the eleven years ending April 1st, 1898, show the number of dentists in the German empire increased from 548 to 1,299. Taking collectively communes with less than 5 000 inhabitants, the proportion of dentists to population was 1 per million; in communes of 40,000 to 100,000 it was 77, and in those of 100,000 and upwards, 87. These figures do not include dental mechanics, among whom are counted dentists, with foreign qualifications. The number of these increased threefold from 1887 to 1898.

TRADE NEWS NOTES

Dr. B. Q. Ayres of Upper Sandusky, Ohio, though located in a large city, is one of the most progressive men in the profession. He was the first to see the advantages of a modern dental cabinet and was the first purchaser, therefore, of The Ransom & Randolph Co's number 75. His equipment now includes a roll-top bench made by the same company, besides all the other paraphernalia required by one who strives and succeeds in equipping his office in such a way that he may serve his patrons in the best possible manner.

Dr W. H. Rowand, of Bellefontaine, Ohio, has found business so good that it necessary for him to have two chairs, so he has made a recent investment. We trust the doctor's chairs may be occupied continuously, nights and Sundays excepted.

The dentists of Cleveland must have had roll-top work benches on the brain. If such is the case we believe they were inoculated by the genial salesman of the Coggswell Dental Supply Co., Mr. Pierson. Anyhow we understand Mr. Pierson had an epidemic of orders last August when he sold twelve of the popular articles referred to.

THE
OHIO DENTAL JOURNAL.

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CONTRIBUTIONS.

The Roentgen Rays with Associated Phenomena and Their Applications in Dentistry.*

BY WESTON A. PRICE, D.D.S., M.D., CLEVELAND, OHIO.

I thank you for the honor, of which I am entirely unworthy, of giving you a little talk on this most interesting subject, which must be very imperfectly covered in so short a time.

If we are to use Roentgen Rays successfully, and intelligently, we must familiarize ourselves as much as possible with the nature and characteristics of this wonderful force. This knowledge is not only desirable but imperative. We can best do this by comparison with other similar forces with which we are familiar. Let us look for an analogy; some similar imperceptible transference of force or energy. You hear my voice, how? Sound is conveyed by a succession of waves. The pitch or tone is dependent on the rate. Let us recollect in passing that the sense of hearing makes us conscious of all vibrations in the atmosphere from sixteen per second to thirty-two thousand. But this energy requires an easily detected medium to travel upon. It cannot come to us through a vacuum.

Another of our senses receives energy which we call light. This may vary in color. Again we are receiving vibrations of varying rapidity and the rate gives us the particular color. Note that this energy passes easily through a vacuum. We call them light waves.

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* Talk before the Ohio State Dental Society, Dec. 5, 1899.

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

Still another sense receives impressions without any trace of the medium that brings it, namely, sensation of temperature, as we feel heat, and cold or the absence of heat. This energy we know as heat waves, and it also passes through a vacuum.

So also a mysterious energy entirely imperceptible in itself, enters chemical compounds and entirely changes them. For example, bromide of silver in the photographic plate. This force we know as actinic waves. Equally mysterious and imperceptible is the force that moves the magnetic needle or marshals the iron filings; magnetic waves. All the latter pass through substance and through great space, even trillions and trillions of miles without an atmosphere or an apparent conductor. We cannot imagine effect without cause, nor can we imagine energy being conveyed without something to convey it. Heat and light, and magnetism coming from the sun or a distant star, must have a means for passage.

This medium, according to modern science, is the everywhere existing ether. It extends throughout all space between all planets, penetrating and pervading amongst the atoms and molecules of all substances, as the air does through a car load of pumpkins. If we follow up this line of thought just a little farther we will get a very comprehensive idea of what Roentgen Rays probably are. When your ear receives two hundred fifty-six vibrations per second, you recognize the tone of the middle C of the musical scale. And just so with every definite rate of vibration, you receive definite impressions.

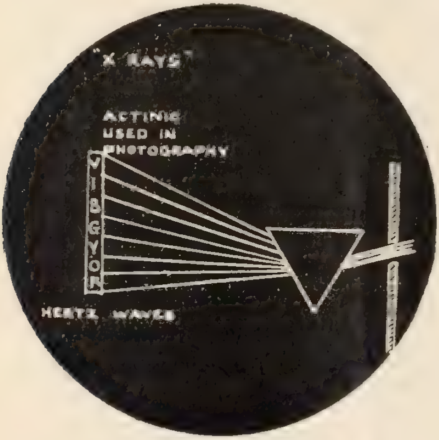


FIG. 1.

Just as the different sounds are the result of definite vibrations in the atmosphere just so are magnetism, heat, light, color, photographic or photo-chemical effect and X-Rays the results of definite vibrations or waves in the ether. Imagine waves in the ether having about such a motion and curve as the surface of water in a rolling sea. You can easily imagine various waves of the same shape flowing at the same rate but of greater or of lesser dimensions. These various ether waves flow at a quite uniform rate, viz., approximating one hundred and ninety-two thousand miles per second, (Tyndall) though for each effect we call magnetism, heat, light, color, photo chemical action, etc., there are different, though definite, lengths of waves, and hence numbers of waves per second. The variety is enormous; from waves over a million miles long for a complete oscillation, as the magnetic waves from the sun, (Oliver Lodge) which require six and a half seconds for a complete oscillation, to waves one twenty millionth of an inch long, (Veller) making two hundred and eighty-eight thousand trillion vibrations each second. (Veller's calculations for X-Ray.)

Intermediate between these we are able to recognize a large number of distinct waves' lengths, though relatively few considering the wide range. The sense of sight recognizes only a short series of wave lengths less than one octave, from one thirty-nine thousandth of an inch long, producing red light to one fifty-seven thousand five handredth of an inch long producing violet light. Practically all the other waves that produce effect upon the human eye, have lengths between these two boundaries.

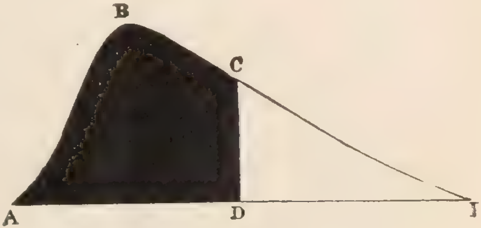


Fig. 2.

The lengths of the other waves determine entirely the color they produce by falling upon the retina of the eye. Time only permits of one example here. We will now have the professor at the lantern, place a prism in front of the light and you will see the distribution of the seven primary colors of the solar spectrum, or in this case the spectrum of the lantern light, though not so plainly as you would from an arc light. The relation of these light-producing waves to other ether waves is shown in this lantern slide (Fig. 1). Without explanation we note that other waves of various lengths each has a different angle of refraction in passing through this prism and in this way we are able to separate and select them. This is true also of those waves on each side of the visible spectrum. Kindly note that all waves longer than the infra-red or shorter than the ultra-violet do not appeal to the sense of vision, and to do so must have their wave lengths or periods changed to come between those limits. This we do with the Roentgen Rays by means of the fluoroscope. The wave lengths are changed in the crystals, which we will explain shortly.

To better understand the nature of the Roentgen Rays we will observe quickly some characteristics of some waves of other lengths. In the lower part of the visible spectrum and extending down through four octaves of wave lengths we have the heat waves. One simple experiment will suffice. I pass the waves from this arc light through this filter made of carbon bi-sulphide holding iodin crystals in solution and remove all the light rays and then condense the remaining rays with this lense, and I am able to set this paper on fire or heat this platinum to a white heat. The relation of the light rays to the heat-producing rays can best be appreciated by this lantern view (Fig. 2) showing the relation of the heat rays to the light rays from the sun after passing through the moisture of the atmosphere and this slide (Fig. 3) the relation of the heat rays of an electric arc to the light rays. In each the dark part from A to D C indicates the relation of the heat waves and their intensity below the visible spectrum and C D to E shown clear the spectrum from red to blue, and the heat waves therefrom, the line A B E indicating the intensity. You will observe that fully eight times as much of the energy of the arc light is given off in heat rays as in light rays. In the next (Fig. 4) we see the relation of many wave forms to each other and to sound waves.

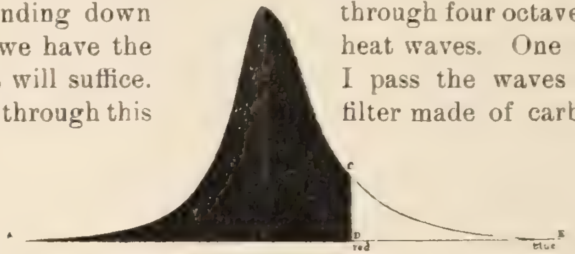


FIG. 3.

The waves of longer period or length do not appeal directly to any of our senses but we know that they exist from their effects. Marconi and others have invented eyes, to see as it were, some of these waves of other lengths. That is the function of the receiver or co-hearer used in wireless telegraphy. I have here arranged a working model. When I set these brass balls of this induction coil about an eighth of an inch apart and cause a spark to jump across, it is probable that the vibrations produced in the surrounding ether are at the rate of about sixty million per second, the waves being possibly a few miles from crest to crest. The wave length used is not known. You notice that as soon as I produce waves of this certain period this co-hearer receives them and closes the circuit of this battery which I have arranged by means of a relay to ring a bell. To show you how little effect distance has I will have someone carry it away through the building behind walls, etc. The model worked splendidly, so far as taken, responding each time the coil was excited, by this means Marconi has signalled ninety miles.

In a similar way wireless telegraphing, or signalling, is done at a great distance by waves of still greater length, magnetic waves, which we have not time to consider.

Ether waves of very short length, extending away above the visible spectrum into the so called ultra-violet rays, including the Roentgen Rays, have the power of producing extensive chemical changes. Chief of these are the actinic rays so important in photography. You will see when I put this bottle of bisulphate of quinine in the ultra-violet part of the spectrum it glows. It is due to this power that we are able to use the Roentgen Rays. We allow these invisible rays to penetrate the tissues to be examined and some of the rays are arrested or stopped according to the obstruction offered by the different parts of the field through which they pass, thus producing unequal chemical action on the plate. Hence the term shadowgraph. This hypothesis of ether waves of extreme frequency explains very clearly and plainly, practically all the phenomena of Roentgen Rays. There

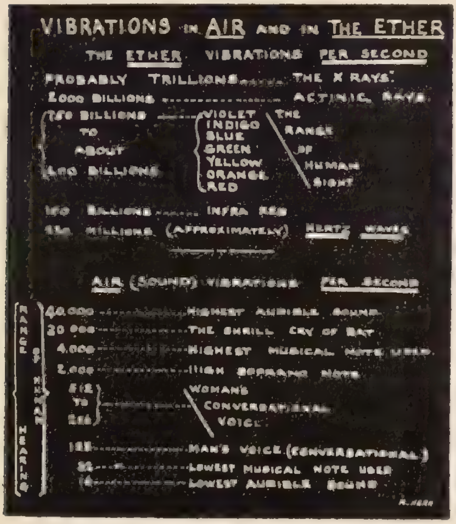

VIBRATIONS IN AIR AND IN THE ETHER
THE ETHER VIBRATIONS PER SECOND
PROBABLY TRILLIONS ...... THE X RAYS.
2000 BILLIONS .... ACTINIC RAYS
750 BILLIONS TO ABOUT 400 BILLIONS ...... VIOLET INDIGO BLUE GREEN YELLOW ORANGE RED
THE RANGE OF HUMAN SIGHT
BILLIONS ...... INFRA RED
MILLIONS (APPROXIMATELY) HERTZ WAVES
AIR (SOUND) VIBRATIONS PER SECOND
40.000 ...... HIGHEST AUDIBLE SOUND
20.000 ...... THE SHRILL CRY OF BAT
4.000 ...... HIGHEST MUSICAL NOTE USED
2.000 ...... HIGH SOPRANO NOTE
512 TO 256 ...... WOMAN'S CONVERSATIONAL VOICE
128 ...... MAN'S VOICE (CONVERSATIONAL)
32 ...... LOWEST MUSICAL NOTE USED
16 ...... LOWEST AUDIBLE SOUND
RANGE OF HEARING

FIG. 4.—SCALE OF VIBRATIONS.

is another theory, that of material particles being thrown off by the anti-cathode which pass through the glass of the tube unobstructed. This theory is not so generally accepted. Its chief supporters, however, are Americans.

Before considering the soucres of Roentgen Rays it would be proper to mention in this connection that the glow of certain insects and the fact that besides their luminosity they are able, through opaque substances, to produce effects upon photographic plates, and also this property of certain substances as uranium salts and radium and the dark rays of certain lights discovered by Le Bon are due probably to other waves of short length like the Roentgen Rays. These probably will be used for the same purpose some day.

The practical source from which we derive these Roentgen Rays is from the point of impact, opposite a concave cathode, when a current of electricity is discharged through a gas in a vacuum tube. Usually this point is a plain platinum surface placed at from forty five to sixty degrees to the direction of the cathode rays. These tubes may be excited by the discharge from an induction coil or a static machine or a Tesla coil or oscillator. As these devices have been quite fully described in current literature we will not stop to review them in detail, except to note the nature of a discharge through air.

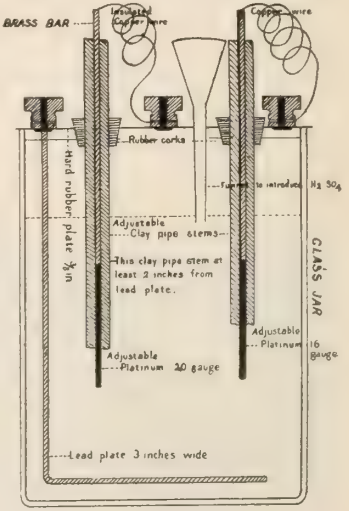
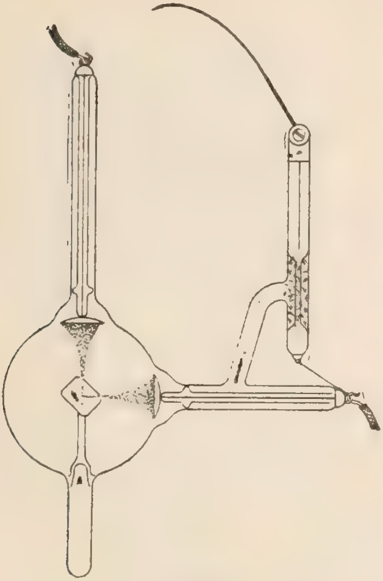


FIG. 1½

This induction coil, you will remember consists of a primary coil of a few turns of coarse wire surrounded by a secondary coil of a very great number of turns of very fine wire. When an interrupted or alternating current is passed through the primary, a current of very high voltage is induced in the secondary, demonstrating itself in discharges between the poles of the secondary. The phenomena are very beautiful in the dark as you observe between these two suspended wires. Lightning on a very small scale. The resistance of the atmosphere is so great that it takes probably several hundred thousand volts to discharge across that distance. When I place the discharging points closer together you see we get a continuous flame. When this discharge takes place through a tube partially exhausted the phenomena are very beautiful. I have here a nice assortment of these tubes which I will now light up with the room darkened. You see both luminosity and fluorescence of the glass. At a ceriain degree of exhaustion the resistance to the passage of the current is very small. When I connect a lot of these Geissler tubes in series, you note besides the gorgeous display, they all together, in which the current has to pass through many yards, do not offer as much resistance as a half inch of air gap. This, by the way, is the principle on which Tesla proposes to transmit an electric current from this country to Europe, without wires. At a certain altitude the atmosphere will be of this minimum resistance and that stratum of air would constitute one path for the current and the earth the other.



FIG, 4¾.

I have some special tubes here also to demonstrate how the cathode rays produce fluorescence of certain salts and liquids. The display is very striking. Of the several methods for exciting the tube I prefer the induction coil, reasons for which can be brought out in the discussion. Next to the selection of the coil, (I like the Ritchie very much) and almost of as great importance, is the selection of an interrupter. Until recently the vibrator was the most commonly used break and probably is yet, though I think it is destined to be supplanted by

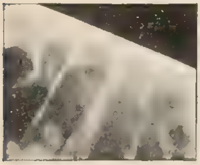


FIG. 5.

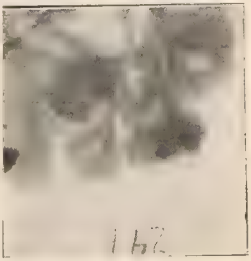


FIG. 6.

the electrolytic breaks. The mechanical breaks are usually very noisy and the mercury breaks often troublesome. The Tesla oscillators are very noisy.

FIG. 7.

With the electrolytic break or interrupter, the capacity of the coil is greatly increased. It was discovered less than a year ago by Dr. Wehnelt in Europe, and this form bears his name. It consists of a fine platinum wire from sixteen to twenty gauge protruding from a glass tube in which it is sealed and a lead plate, both in a bath of dilute sulphuric acid. It will work on forty volts. I prefer using it on the one hundred and ten and have the acid solution so dilute that it serves at the same time as a rheostat. Great trouble has been experienced in making the platinum points adjustable, which is very desirable, and yet durable, owing to the heat and action of the acid. I am happy to state that I have overcome this difficulty very successfully in the manner you see here which is exceedingly simple. The platinum wire is soldered with twenty karat gold solder to a small brass bar of about the same diameter and the whole placed inside a piece of clay pipe stem about eight inches in length (Fig. 4½). The clay is not affected by either the heat or the cold, and while the apparatus is delicately adjustable it also is very durable, the pipe stem is adjustable through a rubber cork in the hard rubber top. I consider this form of interrupter very superior to any I know of. It has never failed to work in my hands since this arrangement was devised. Its construction is very simple, as seen by this drawing (Fig. 4½). Much could and should, be said about the selection of tubes but time will only permit of a word or two. Deal directly with a reliable firm and use pretty high vacuum tubes. I have several forms. For a description of the most general forms I will refer you to Dr. Kell's admirable

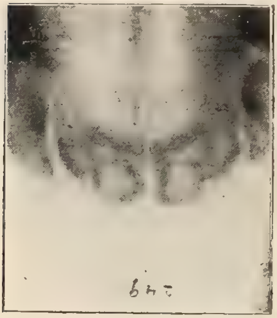


FIG. 8.

paper before the National Dental Association last August. I must speak here of one form or rather addition I have made to tubes which is different, and superior for its purpose, to anything I have seen or heard of. It is for screening all the luminous rays from the tube, while allowing the Roentgen Rays to pass. It consists of a jacket of unvulcanized dental rubber. I use the red, as you see here, which is opaque to the X rays for all parts except where the rays are emitted where I use a window of black rubber, through which the X rays pass unobstructed. This tube is used for making fluoroscopic examinations in total darkness. It works to perfection and serves the double purpose of assisting to prevent danger of puncture. In general I will say I like the Queen self-regulating tubes the best. My effort has been to reduce the time for getting good radiographs. Some of the best pictures I will show you this evening were taken in fifteen seconds through the dense jaws. This will be much reduced to five seconds or less, for the average, in part by placing a piece of florescence screen, specially prepared, each in front and behind the celluloid X-ray film and part, by using a tube of extra high current capacity. A new design of single focus alternating current tube of special merit made by Queen & Co., is shown in Fig. 4¾.

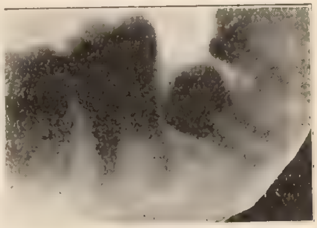


FIG. 9.

Every class of cases and ages require a tube of different condition and time of exposure, this requires a large assortment of tubes or adjustable tubes. This is the greatest factor in getting universal success and should be made the subject of a special paper. I may be able to give some hints when showing the practical cases. In our dental work the ordinary fluoroscope is practically of no use, except to show the condition of the tube. I have constructed some special screens which can be placed in the mouth and the shadow observed by a mouth mirror. This is only of service in a totally dark room which this tube with the jacket is designed

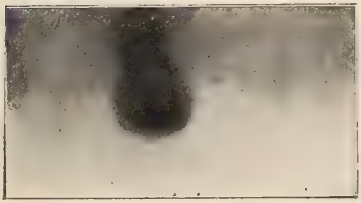


FIG. 10.

for. The same effect has been accomplished by others in a less convenient way.

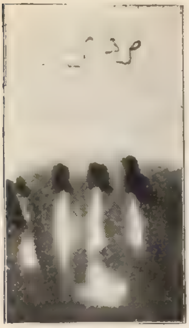


FIG. 11.

By far the most important way for us to use the X rays is to make a negative. For preparing the plate for this, many methods have been suggested. Some use entirely pieces of glass negative and wrap in black paper. Others use ordinary kodak film wrapped and sealed in black paper; some bind with lead or tin foil. To my mind no method that I have heard of, approaches in convenience and simplicity the one I suggested and reported in my lecture before the Northern Ohio Dental Society last May. It consists simply in placing a large piece of a specially prepared X ray film which is quite stiff, (Carbut's preferred) between two layers of unvulcanized black rubber, and allowing the rubber to touch around the edges, where you dentists will best know how sure it will cling. This can now be cut through in any direction with a pair of shears and simply pressing the rubber together where you have cut, seals a perfect joint. Of course this is perfectly impervious to moisture and light and at the same time offers almost no resistance to the X rays. I put a piece of Eastman's X Ray bromide paper in also with its face to that of the film, thereby getting a photo direct and also serving a double purpose, in protecting the sensitive surface of the film. Occasionally it is an advantage to secure the plate with a special plate holder, but very seldom do I think it desirable or necessary. The plates prepared in the way I speak of are so convenient, you can bend a corner over thus (demonstrated) anywhere, thereby making the plate any desired shape or size, and of course the rubber adheres to itself and holds it firmly. The plates can generally be held in place with a finger to get the best results. You will observe a number on each of the slides exhibited. This is done by placing little figures on the outside of the plate-holder. They are made of fine copper wire prepared in advance and stuck on gum labels. It is a great convenience for keeping records, without danger of getting negatives mixed. I

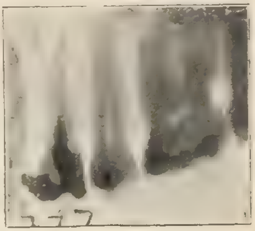


FIG. 12.

have experimented with many opaque inks but they are not so satisfactory. I have a very complete system of keeping all the records of each case, upon the envelope used as the negative preserver, which I will pass around. Note especially that the angles of the rays, the teeth, and the plate, to each other are kept in each case. This is very important and valuable since by it you can at any time determine the exact dimensions. Before proceeding with the practical cases I want to advise any intending investors to get a small glass-top table on large, rubber-tire castors, or wheels, for keeping your coil, and accessories, which are few, upon. Also note that it has recently been shown that the time for exposure is in direct proportion to the distance and not to the square of the distance as has been generally thought.

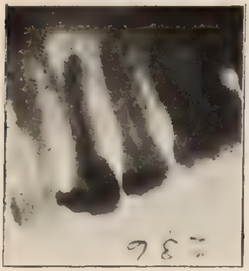


Fig. 13.

We will now see some lantern views of practical cases and one or two typical pictures will suffice in each of several classes of cases in which the Roentgen Rays are specially well adapted for diagnosis. Unfortunately a great deal of the detail and information is lost as compared with looking through the negative itself. Photos, even contact prints, lose about half their detail. In good negatives even the cellular structure of the bone is distinctly shown. This is mostly or entirely lost on the screen or in the half-tone used for illustration, so you will have to make a great deal of allowance.

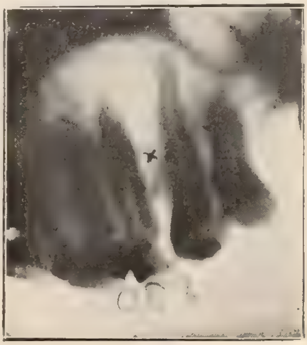


Fig. 14.

For the location of unerupted teeth it is simply perfection. Fig. 5 shows the condition of the superior arch of a boy at ten years of age. Two generations preceding, on his mother's side, had been lacking the superior laterals. She presented him to have steps taken to prevent the shedding of his deciduous laterals to make them permanent. You can scarcely imagine the joy of that mother, who herself suffers considerable disfigurement, from this cause, when she saw the radiograph showing the development of these teeth that had been the object of her cherished but abandoned hope.

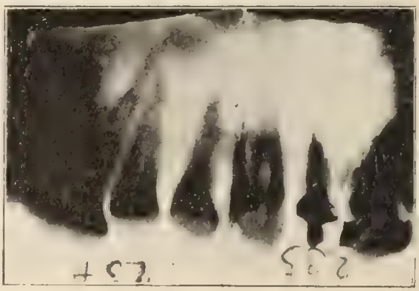


FIG. 15.

The next (Fig. 6) illustrates the condition in a case of delayed dentition of the bicuspids. The cuspid has been erupted for some time and the first deciduous molar shed by this eruption. This superior arch is exceedingly retracted. The radiograph shows that but one bicuspid has formed and it is thrown out of its course by about twenty degrees. It is absorbing the anterior buccal root of the first permanent molar. A course of treatment is quickly suggested.

In the next (Fig. 7) is a typical example of the appearance of cases where a permanent tooth fails to form and the deciduous is retained. In this case an inferior deciduous molar. A lady of about thirty years of age discovered that she still had a baby tooth and felt so ashamed of herself that she hurried to the office to have it extracted. The radiograph settles all hope of it ever having a successor.

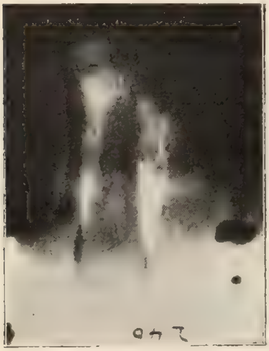


FIG. 16.

I will now show you a wonderful picture demonstrating the very early calcification of the enamel of the permanent teeth. (Fig. 8). It is taken of the superior arch of a baby boy of fourteen months, who has no deciduous teeth erupted yet in this arch. The radiograph shows not only the development of all the deciduous teeth, but also the commencement of calcification of the permanent centrals. But this is not all. While his father is lacking his permanent laterals we can see clearly in the negative, which was a ten second exposure, even at this young age the crypts forming for his permanent laterals. I know of the joy of that boy's father at this information, for he is my boy.

An example of lost teeth is shown in the next, (Fig. 9), which indicates the whereabouts of the missing bicuspids. There are very many cases of this class.

The next (Fig. 10) shows a lady's superior arch at about thirty years of age. When this picture was taken she was still waiting for her permanent teeth to erupt, but she need not wait longer for this lone second molar is all she is to have on that side. Five teeth are lacking on that side and three on the other.

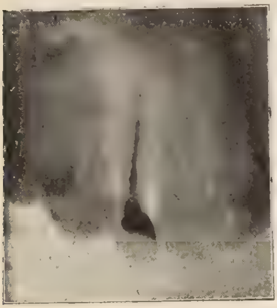


FIG. 17.

In no class of cases is this means of diagnosis of more frequent service than for exploring the various deep pathological conditions. For example, the extent and location of abscesses, the direction and path of the fistula, and of very great importance, the most dependent point of the abscess. This picture (Fig. 11) shows the appearance of a blind abscess at the apex of an inferior incisor. It shows which tooth is affected and that no teeth in this vicinity have root fillings to suspect as imperfect.

FIG. 18.

In the next (Fig. 12) we have some information regarding a case of neuralgia of uncertain cause of years standing undoubtedly caused, as proven later, by the blind abscess at the apex of the first superior bicuspid. The abscess was evidently caused by imperfect root-filling, which is clearly shown to only extend half way to the apex. On opening up the canal I found putrescence in the apical half of the canal. This negative shows beautifully the cellular structure of the bone.

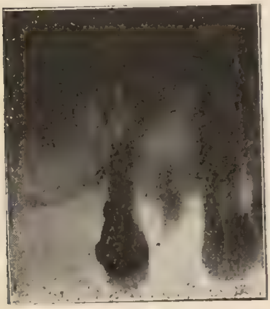


FIG. 19.

The next picture (Fig. 13) shows the same root filled to the apex. The blind abscess was drained through the buccal wall of the process.

These abscesses vary greatly in extent and their exact extent is clearly shown in good radiographs, as for example in this picture (Fig. 14) which shows a blind abscess of considerable dimensions, and of years standing, during most of which time it has been almost continually under treatment, so the patient informed me, through the root-canal of the lateral where it had its inception. The lateral is the tooth nearest the figure 3. These numbers, you remember, are produced by placing metal figures, made of fine copper wire stuck on gum labels, upon the outside of the negative cover, when the exposure is made, and are invaluable for keeping records correct, and for identifying negatives. This picture shows beautifully the most dependent part of the abscess, which I have marked X, and the folly of trying to drain it through the root-canal. On establishing free drainage at X, by drilling through the process, and thoroughly sterilizing and cauterizing the pocket, a permanent and perfect cure was effected in a very few days.

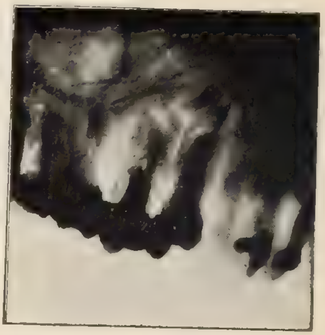


Fig. 20.

In this next picture (Fig. 15) we have an exceedingly large abscess, and also one of long standing. It had a fistula beside the second bicuspid. The dentist sending the case for radiographing had labored faithfully, but with unsatisfactory results, to cure it. A crown on the lateral had been destroyed to examine the root-filling beyond it. and the second bicuspid had been extracted and replanted in search of exostosis. The radiographs taken in sections, show the root of the lateral to be largely absorbed and a series of pockets difficult to drain between the roots of the various teeth. It also shows the abscess to extend beyond the anterior buccal root of the first molar.

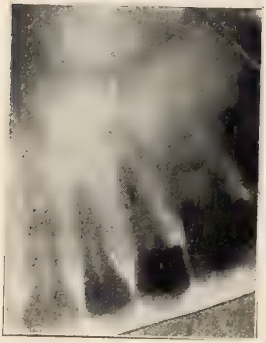


Fig. 21.

The picture now before us (Fig. 16) shows a remarkable change of bone structure taking place around a superior central incisor, one that had, a couple of years previous, received a hard blow, since which time it has been constantly elongating, though it is very solid in its attachments. The negative shows clearly the old base for the apex from which it has advanced, about three-sixteenths of an inch. It is an interesting study in pathology. The bone, though forming an unusually firm attachment, is evidently less dense than normal, and slightly honey-combed in structure. The peridental membrane is almost obliterated.

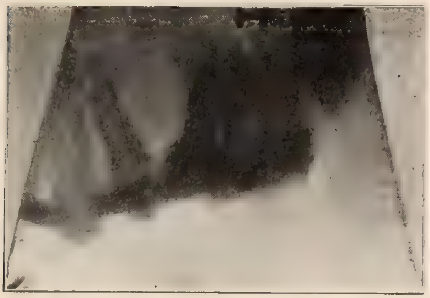


FIG. 22

In the next picture (Fig. 17) we have another blind abscess with its evident cause, viz.: Imperfect root filling. The case was of thirteen years standing and had received extended treatments. I amputated the tip of the root, without extraction, at the point where the root-filling ended as shown by the radiograph (Fig. 17) and with splendid results. The next picture shows the same tooth after the root amputation (Fig. 18).

FIG. 23.

In the next picture (Fig. 19) we see how beautifully the bone has adhered around the stub of one of these amputated roots. This amputation was made in January, 1896. The patient claims it to be the strongest, solidest tooth she ever had.

In the next (Fig. 20) we see a broken broach protruding through the apex far into the tissue.

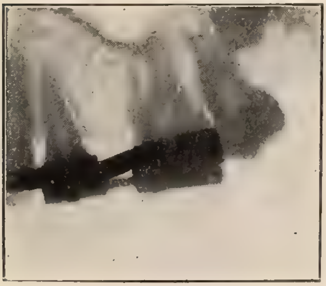


FIG. 24.

In this picture (Fig. 21) we see much of interest. The radiograph was taken to locate a piece of a cambric needle which the patient had broken in the root while trying to relieve an abscess. It was thought to have been forced through into the tissue as the apex was found open. It is easily seen lodged in the root which was evidently bifurcated. This picture also shows beautifully the relation in this case of the teeth to the antrum. You will observe that the roots of the second molar penetrate nearly half way up through that cavity.

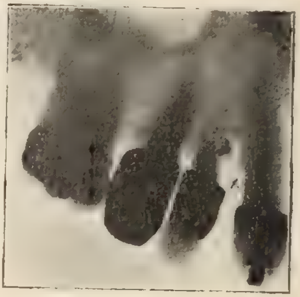


FIG. 25.

The value of Roentgen Rays in Orthodontia is almost beyond calculation for it enables us to see just how our force is being expended. Probably the greatest factor in that work is to move the roots as well as the crowns. In this picture (Fig. 22) we see an attempt to draw two teeth together when alas only their crowns have been tipped toward each other.

This next picture (Fig. 23) shows the commencement of a case where separation the width of a tooth (one having been recklessly extracted) is required. And in the next picture (Fig. 24) we see how well this has been accomplished. Unfortunately, time only permits of one example of each of a few classes of cases out of a great many.

The next (Fig. 25) shows beautifully the fit of these crowns and the depth of a pyorrhea pocket, supposed, marked X. The radiograph shows a perforation in the wall of the root of the first bicuspid through which cement has been forced into the tissue producing the suppuration and absorption, supposed to be a pyorrhea pocket.

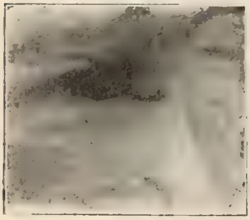


FIG. 26.

In this next picture (Fig. 26) which is the last, we have an example of the service of the Roentgen-rays in determining the location of third molars. This one is not erupted at all and lies at just right angles to its proper position as shown by the second molar. It would certainly be a difficult one to extract if you did not know its position.

Gentlemen, we must not take time for more and I ask your pardon for keeping you so long. I thank you for your patient attention. I will be glad to allow any one interested to make observations with the Roentgen Rays or examine the apparatus after the dismission, or to ask questions.

I want to thank Prof. Thomas, of the Ohio State University, for his great kindness in helping me out of a predicament this evening. The coil I expected to use, which you see here, was so roughly handled in the express that it was disabled, and he very kindly brought me down one from the University at the last moment.

DISCUSSION.

Dr. L. E. Custer, Dayton: In regard to the manipulation of the tubes. When the X-ray was first discovered and put into use, tubes were used the vacuum of which could not be changed, so that a tube of very high vacuum would always remain at that and it was impossible to lower it. We understand that as the vacuum becomes higher it becomes almost impossible to produce X-ray; the lower the vacuum the easier it is for the current to pass through.

In the later forms of tubes this has been overcome by the introduction into the tubes of potash, which on being heated a portion of the potash vaporizes and the vacuum is reduced to its proper degree. This is a very important thing in the work we have to do, for in going through a thick or deep tissue it is very necessary to have a high vacuum, while for through the hand and the like it may be quite low; also for fluoroscopic work it is quite important to have high vacuum for that. You can therefore see how important it is to have a tube which can be regulated.

The method which Dr. Price has outlined in detail for procuring the skiagraph is certainly unique and is to my mind the best thing that can be used.

The problem is to get a tube which will hold a satisfactory current and then we will have an instrument by which we could produce skiagraphs in seconds where we do now in minutes. On the account of the difficulty of getting a tube, I have lately ordered an induction coil, such as you see here, except that it will give a 15-inch spark instead of a 10-inch spark. The principle which underlies that of the induction coil is that the longer the contact can be made and the shorter the spark the greater will be the induction.

The device which Dr. Price has used in conjunction with the interrupter is certainly a very useful one. If you have watched the history of the interrupter you know it is a problem upon which the best electricians have been working, and I want to say that much credit is due Dr. Price for working out this difficulty in such a simple manner; an ordinary clay pipe stem through which a wire is thrust and fastened, is the best thing I have observed or read.

Of course all different machines require different tubes. Those for use upon induction or static machines have one cathode disk and reflecting electrode, which throws the rays out at right angles. For the Tesla coil the tubes are called double focus tubes, because they have two cathodes and a double reflector, which is not connected with the cathodes. They lack good definition, because of forming two reflections. The results which have been obtained from them seem, especially in skiagraphic work, to be about as good as that obtained in other machines.

One advantage in the Tesla coil over the ordinary induction is the amount of time saved, which is about one-half. This is not of great importance at this time, although formerly it was the cause of the burning we have all heard of.

I think there is scarcely one in the audience but will agree with me that a new field is opening to the profession, and that if we were to make use of the X-rays we will be much better prepared to serve our patients than heretofore. It is not necessary for anyone to get an expensive appliance. An ordinary induction coil, to give a six or eight inch spark, and two or three tubes are about all the expense, and should not exceed $100.

Dr. Cassidy, Covington, Ky.: About twenty years ago, one Crookes, an eminent English chemist, made a study of the properties of matter, and I think he may truly be said to be the discoverer of the whole business; he called it the "radiant matter." The discovery of the Roentgen Rays was an accidental one, by one who was familiar and informed of the radiant matter.

Crookes was somewhat tinctured with spiritualism, so when he discovered the radiant matter, he immediately wrote a paper, which was published in all the languages of the world, in which he stated that he had reached the border land of spiritualism, and his writings at that time were away ahead of his days and equal to our present knowledge. When his paper first came out it was regarded a little worse than a spirit. There are good and bad spirits, and I am almost forced to believe there are good and bad X rays. A recent writer states that the X-ray can lie as irreligiously and as with as little impunity as any other affidavit.

You all know what a lawyer can do when a question comes up; he can lie on one side and then on the other. A lawyer in Chicago placed his hand before an X-ray machine, for the purpose of obtaining a picture, and the ghost picture came out with all parts in their normal condition. He then introduced his same hand before the machine, but bent the first joints a little and the skiagraph in the second exposure showed the bones apparently in a mashed condition, as though the fingers had been in a railroad accident; the parts appeared in an abnormal condition.

Another test was made. A bullet was placed under the clothing, outside of the body, and the picture showed it exactly against the spinal column. Of course, this may be a trick with the density of the tube, or something we do not know about, but still, if this is the case, it is not reliable.

Dr. Butler: I have only a few words to offer in connection with the two excellent talks on this subject, the one last night and the other by Dr. Custer here this afternoon; they have both simply showed me how useless it is for any dentist, however much he knows on this subject, or how much skill he has, to cover all the ground of his dental practice and do it in the best possible manner, and at the same time keep up in the X-ray work.

I think it is hardly worth while for us as a great number in the profession, to try to master this subject, and the best thing to do is to turn over any case we may have into the hands of these specialists and let them help us out.

Dr. Taft: I want to refer to a case of which I have some knowledge, that occurred within the last five months. A lady had a fall and injured her shoulder, from which she suffered considerably. An effort was made to reduce the supposed dislocation. Success did not attend this effort and she suffered right along. She went to see a surgeon and he suggested that an X ray picture be made to determine the trouble. The shoulder was bared and the chest exposed, the whole one-half of that part of the body; the lady during the operation used her hand to hold the clothes in position at that place.

The rays were applied and the picture obtained with apparently no effect to the patient. But within twenty-four hours a redness of the skin began to appear over all the surface which had been exposed to the rays and within two or three days the whole surface looked as if it had been burned or scalded and a a blister raised over it, showing the same condition as any other kind of a burn. The cuticle came away with more or less discharge of serus and pus, and a very agonizing burn seemed to have been produced.

Within a week the hand used in holding the clothing also took on the same condition, first redness followed by formation of blister, raising of cuticle and discharge of serum, so it was impossible for the lady to assist herself. This condition remained for some time, the surgeons were non-plussed, had never seen anything like it and knew not what to do, only to wait.

After three or four weeks she was so far recovered as to allow her to return to her home and within two or three weeks after arriving home the skin had returned somewhat to its normal condition, although the hand was in an unusable condition for some time.

Now the question is, is that liable to occur? I have seen several cases of burns but never anything as bad as this. Does it occur frequently and is it hid from the public? If they are likely to occur it comes up as a very serious and important question in connection with the use of X-ray. I would like to be enlightened on the subject.

Dr. Emminger: A number of you no doubt remember the case of Prof. Thomas, of the University, who last year was almost wholly incapacitated from his duties for some time brought about by frequent experiments of the X-ray on his own body.

Dr. Price: Regarding the condition of the tubes. All tubes will tire just as a machine or person; you may work one for weeks and months but it finally becomes exhausted from overwork or too high vacuum, then lay it away for two or three months when it can be used with splendid results.

Another way of reducing vacuum in the tubes is to pass a very heavy discharge through them, such as the electrolytic interrupter will give; it will bring the vacuum way down.

By heating the tubes you will also drive molecules of air that are condensed on the sides of the tube back to their vaporized condition. These are practical points, which, though easily forgotten are very important, so I call them to your attention.

Regarding the stories relating to the manipulation, by that Chicago lawyer, of his hands, and the bullet in his back and one thing and another, it is the highest piece of bosh I have ever heard of. Any man of experience knows how to conduct the operation to get definite results, and if he sees such a plate, he is bound to suspect it right away. If you shut one eye and look out on a lake at a boat, you cannot judge how far away it is from the place where you are standing. Why is this? Perspective. Both eyes are necessary to focus it to a definite location. So we have this same principle in the use of the tubes. After getting the picture of the bullet from one plane all you have to do is to turn the man half way round and take another and you know whether the bullet is in his vest pocket or in his back.

As far as burns are concerned they are liable to happen through carelessness or accident, and will probably continue to happen, with less and less frequency, as long as the science continues to develop. It is now almost as positively known why and how they burn as you know why your finger will be burnt if you stick it into a lamp flame.

As long as you live up to the information of the day regarding the cause of this, it will not happen. The trouble occurs because of using tubes of too low vacuum, the rays of which are absorbed by the tissues instead of penetrating through them, and usually by very long exposures. In the case referred to by Dr. Taft, I could have told that they would not get a good picture because they did not have rays of sufficient penetration. It takes a very high vacuum to get a picture through all that tissue. Fortunately for us as dentists, we need tubes of very high penetration because we have nothing to do with taking skiagraphs of soft tissue, that is for very soft tissues.

I will give you a little bit of practical experience. I have taken over two hundred and fifty skiagraphs and I have never in any case caused a particle of irritation except in one, and there no inflammation. In that case I was looking for the cause of a bad case of neuralgia of very long standing, and made over twenty exposures within a very short space of time. By the way the effect of these exposures is accumulative, if we make five today and five to-morrow and the next day the same number, the effect will be the same as if we had taken all at one sitting. In our ordinary radiographs I never need to make any exposures over three minutes and usually ten seconds to one and a half minutes. The historic cases of X-ray burns were from long exposures, one-half to two hours.

In the above case referred to we encountered the greatest density I have ever found on account of this neuralgia, the bones were so abnormally dense that ordinary tubes, used with splendid success in other cases, gave no contrast between bone and roots of the teeth in her case. I wanted to get a tube of sufficient penetration to pass through the skull, so I sent for a large new tube for this case and as she was waiting to leave town I did not stop to test it before using. I got it from the Edison people, supposed to be reliable.

After making several exposures and dismissing the patient I tested the tube and found the spark equivalent very much lower than what our present knowledge knows to be required and consistent. There is no excuse for any manufacturer sending out a tube which will require less than a three or four inch spark to start, this had half inch which was very, very low. Some weeks after I heard through a friend, that some of her hair came out but there was no indication of inflammation. The hair will grow in again. There has been no inflammation at all. I know very well why she was injured, it was because of the condition of that tube. I should have tested it before using, but as she was waiting to leave town, I hurriedly put her in the chair and rushed the case along.

DR. CUSTER: Did you use a screen between the patient and the tube?

DR. PRICE: I did not use the screen. I use only very high penetration rays and short exposures, and believing the tube all right, I thought I had no occasion to. If I had used a screen it would have prevented the trouble. An aluminum screen is very good but I think a thin sheet of this red unvulcanized rubber is the best. If the screen is metallic it is likely to spark to the tube, and there will be more danger of puncturing the tube. The red rubber is a non-conductor.

CASES IN PRACTICE.*

A Malposed Tooth.

BY C. D. PECK, D.D.S., SANDUSKY, O.

About three months ago a case was presented where the first and second molars were missing; it was apparently a root which had been left; it was below the gum. On investigation, I found a third molar tooth lying in a horizontal position, with the grinding surface toward the rear, which had never been erupted; after cocaining I succeeded in removing that tooth. It extended through the floor of the antrum; I could pass an instrument clear through into the antrum. I have been able by proper antiseptic treatment to nearly máke a cure.

The patient lived eight miles in the country, so could not visit me very frequently. After that tooth had been removed for four weeks, there was an opening in the process, the patient again visited me and the opening was nearly healed over, so by following the treatment it is slowly closing up. I saw him again a few days ago and it was just about closed.

Teeth Erupted into the Antrum.—Inverted Molar.

BY M. H. FLETCHER, D.D.S., M.D., CINCINNATI.

Case I. In my investigation of disease of antrum, I have seen two teeth erupted into the antrum. The first I ever saw was a surgical case in which a cuspid was taken from the left antrum, the patient having suffered for years with pain, finally swelling, great discharge of pus and finally application to a surgeon; the surgeon was a friend of mine and asked if I would be present at the operation. A great portion of the superior maxillary bone was removed; a cuspid tooth had been turned back, the posterior approximal surface having been exposed in the antrum, this surface had decayed and the tooth had died, and patient had abscess from this tooth; there was a great deal of pus in the locality, consequently he suffered a great deal.

There being no way to get at the tooth, no knowledge of its location, the surgeon was obliged to perform quite an extensive surgical operation, and the patient lost most of the superior maxillary bone.

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* Presented at Ohio State Dental Society, December, 1899.

Case II. was one which caused a different kind of trouble; it was brought to my attention by Dr. P. S. Conner, of our city. A third molar had become inverted, the crown having presented itself toward the nose, slightly upward and pressing against the wall upon which the turbinated bones are found. This produced irritation, which resulted in a new growth of bone; this new growth having completely filled the antrum. The superior maxillary bone was dissected out and found to be solidified completely, pushing the socket of eye up, and the teeth were pushed down so that the articulation was entirely out of shape.

The history of this case taught me this lesson, that whenever we have obscure pain in this locality, it is well to investigate very thoroughly. In my own hands one of the most satisfactory means of diagnosing is that of mouth illumination. We can all now get these little mouth lamps which illuminate very well, and in order to make this diagnosis more thorough it will be found necessary to have a three candle-power lamp and with a little practice it is easy to tell if the tissues are normal or abnormal.

On Saturday of last week I operated on a case in which the patient had suffered with extreme pain in the region of the canine fossa; on examination I found a great amount of spongy bone underneath the soft tissues; the illumination showed a shadow in this place. It has been my experience that the illumination will throw a shadow or different light through abnormal tissue. I have no doubt that if it had been used in the cases above referred to, better diagnosis could have been made.

The suggestion I would make in handling cases of this kind is get a lamp illumination. I have known of the history of numbers of cases in literature of teeth erupting into the antrum, showing them to be usually the molars, most likely the third molar. So, in conclusion, if you have any cases where a diagnosis of bone is necessary, illuminate with a three or six candle-power lamp.

A Case of Antral Trouble.

BY J. W. VAN DOORN, D.D.S., CLEVELAND, O.

I HAVE a case which is strictly a case of antral trouble. The patient, a man of 53 years or thereabouts, had been for four months on the verge of nervous prostration, incapacitated for work. He had had no trouble with his teeth, therefore had very little occasion to consult a dentist; but after this sickness of his he came to me and complained of pain in the region of the first superior molar. The tooth had been filled, but the filling had dropped out during his sickness. I put on the rubber and worked a little while in the cavity and finally approaching so close to the pulp, found it would be the best thing to destroy the pulp and made an application of arsenic paste for that purpose. (Burdoch's paste). After leaving in the tooth ten days or two weeks, having had no irritation or pain as a result of application, I removed the paste and entered the pulp chamber without causing any pain. I should have stated that this gentleman had been treated by one of our physicians for nasal catarrh for some time. The discharge from the nostril had been very offensive and great in quantity, and extended over some time. The physician finally suggested that the difficulty might arise from inflammation in the antrum. And so, although I did not know this when the case was presented to me, when I entered the pulp chamber and removed the debris I found that the probe met very little resistance and made its way up at a point about one-half way between palatal and anterior buccal root; draw a straight line between this and the point would be about half way on that line. I continued the probe and found it extended into the antrum. I enlarged that opening with a large bur and soon succeeded in getting a very copious discharge of muco purulent pus; washed it out with peroxide; made an appointment for next day, securing in the mean time an iridio-platinum point for syringe, in which I used a 3% solution of pyrozone, forcing it in until it came out at the left nostril after thoroughly washing out in that way for two or three days in succession, I then used glyco-thymoline as a wash. The antrum was affected afterwards by the death of the pulp in this molar tooth. I succeeded by such simple means as this in getting rid of the discharge entirely, and it then only became a question of simply closing up the opening. This was done by the use of europhene, pumping it up into the canal and then vaporizing it by bringing heated instruments into contact with it; in this way packing root canals of tooth and also this artificial canal with same. The tooth has been sealed up in this manner for about six weeks and I have seen and telephoned patient several times and there has been no recurrence of pain or of discharge. Of course it is not cured, but still the antiseptic conditions are thoroughly satisfactory and all things indicate that the inflammation has subsided, and I see no reason why not to expect a permanent cure.

Report of Experience with Pressure Anesthesia.

BY E. M. COOK, D.D.S., TOLEDO, O.

I HAD a case last year which was very interesting to me and might be instructive to those who have not had much experience with the pressure anesthesia method of removing pulps. The patient came to me with a highly inflamed pulp and a great deal of pericementitis; the tooth was long and it was impossible to put the least amount of pressure upon it. By removing as carefully as possible an old filling that covered the pulp, I was enabled to introduce a very strong alcoholic solution of cocain, but the slightest pressure of the cotton caused such severe pain that the patient could hardly endure it. After working carefully and making slight pressure with cotton, I was then enabled to introduce the soft rubber over the cotton and began by making a very light pressure, and after a few moments I was enabled to increase the pressure and, as the operation continued, the sensitiveness of the tooth decreased until I was able to put all the pressure upon the tooth that was necessary to drive the cocain into the pulp completely and I removed the pulp, which was in a highly sensitive condition, without any or very little pain to the patient; after thoroughly drying I filled it immediately, and there was no recurrence of soreness after the operation. I have since last February had but one case of the removal of a pulp from a root canal that has not given me perfect satisfaction by the use of pressure anesthesia.

REPORT ON CLINICS GIVEN AT OHIO STATE DENTAL SOCIETY.

Gold Filling by Hand Pressure.

BY DR. E. D. SCHEBLE, TOLEDO.

DR. SCHEBLE has used this method for sixteen years and uses all kinds of foils, preferably filling cavities with soft gold. The patient operated upon presented a mesial cavity in the superior left lateral incisor, quite extensive, reaching from cervical margin to near the incisal angle. The gold used was S. S. White's No. 4 soft gold. The instruments were ordinary serrated pluggers of simplest forms; large ebony handles. The pressure was heavy, but the patient claimed there was no pain. The filling when completed had the appearance of being a good one. He used fine pointed instruments to finish around edges.

Filling Teeth with Tin and Gold.

BY DR. C. I. KEELY, HAMILTON.

The patient was a gentleman of about 35 years of age, who presented two cavities in the superior left bicuspids, a distal cavity in the first and mesial cavity in second bicuspids.

Dr. Keely, after preparing cavity first in the mesial portion of second bicuspid, applied the matrix, allowing it to be loose, so as to allow the tin to be flush or extend a little over edge of the cavity. He used Robinson's fibrous foil, building up the cavity about two thirds with this material, his favorite instrument being a fine-pointed, smooth-tipped plugger, malleting with a lead mallet of considerable weight. Ney's soft gold was then used, annealing in an alcohol flame.

Dr. Keely is quite fortunate in being able to mallet with his left hand, thus having his right for the manipulation of the plugger.

His reasons for the use of tin are: 1st. The therapeutic value due to the chemical action which takes place between tin and tooth, also on surface of tin, thus lessening decay. 2nd. The time saved in an operation, as cavity is more quickly filled with tin.

One interesting feature was his method of starting the gold. The last piece of tin was adapted so as to leave a little pit at the linguo-pulpal angle of the cavity, in which it was quite easy to adapt the gold. About two-thirds of the cavity was filled with tin (this varying, of course, according to the cavity), when he finished with gold.

The matrix was then removed and the tin burnished over the edges of cavity and at cervical margin, the filling then being finished with strips lubricated with soap, he using this in preference to oil, on account of disagreeable odor of the latter. Moore's disks were then used in finishing. The distal filling in the first bicuspid was then made in a similar manner.

Contour Filling, Using Woodward Matrix.

BY DR. J. R. OWENS, CLEVELAND.

The case supplied Dr. Owens was not that which best demonstrated the use of the Woodward matrix. It was the posterior cavity of the left inferior second bicuspid; the first molar that should adjoin the bicuspid had been removed and a space equal to one-third of the molar remained. The case was a large cavity with the pulp exposed. This incidentally required immediate removal of pulp and root filling. The pulp was anesthetized with hydrochlorat of cocain, injected by pressure, and root and pulp cavity filled with oxychlorid of zinc. In adjusting the Woodward matrix, the space between it and the second molar was packed with gutta-percha, and when the gutta-percha was hard the screws of the matrix were brought to bear upon the gutta-percha, this, however, not being as firm and stable as a tooth would be, a ligature was placed about the bicuspid and upper part of the matrix to hold it firmly to place. The operation was entirely successful.

Gold and Tin Work.

BY DR. H. L. AMBLER, CLEVELAND.

The exhibition was of gold and tin work, using Dr. Ambler's tin foil. His exhibition consisted of 1st. Filling in natural tooth. 2nd. In steel matrices. 3rd. Filling with pure tin base and gold face. 4th. Filling of tin and gold folded in alternate layers. 5th. Tin fillings made with an ivory plugger. 6th. Tin and gold fillings made with a tape of tin and gold folded in alternate layers; filling made with an ivory plugger. 7th. Gold fillings in natural teeth, made with an ivory pointed plugger (Shumways.)

Dr. Ambler, in his own practice, uses serrated pluggers.

New Instruments for Removing Tissue from Partially Erupted Teeth.*

BY DR. J. R. BELL, CLEVELAND.

The set consists of four instruments, for which Dr. Bell, we understand has a patent, and he claims they are the first that have been made which will successfully remove that soft tissue overlying a partially erupted third molar. The parts are first anesthetised and the lance is drawn from within outward, cutting two transverse grooves or slits about as deep as the second molar. Then he takes up this flap with a pair of forceps and uses his curved probe-pointed scissors, cutting out the flap and exposing the tooth. The instruments are entirely new in design and are made by Fred. Hoslan, No. 83 Pulaska St., Brooklyn, N. Y.

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* These instruments were illustrated and fully described in an article by Dr. Bell, in Ohio Dental Journal, May, 1899.—[Ed.

Continuous Gum Work.

BY DR. W. T. JACKMAN, CLEVELAND.

THIS clinic was the putting on and baking body and enamel, continuous gum body. He used electric furnace. There was nothing new in this clinic, the object of the clinician being only to stimulate the members of the dental profession to do more porcelain work, especially of this class. He claims we could do more of this kind of work if we were prepared to do it and would show the beauty and utility of it to our patients. To do this he claims it is necessary to have an office piece to show, for it is utterly impossible to have the patient understand what you mean by continuous gum work unless he can actually see it.

A New Aluminum Solder.

BY DR. J. FRANK COOK, TOLEDO.

THIS was a demonstration of the use of aluminum solder in plate work. The solder was of sandy consistency, containing the flux in its make up; to use same it is necessary to use pressure to cause the two pieces of aluminum to adhere or properly solder. This, in the eyes of the writer, is a great disadvantage in its use; the clinician himself had difficulty in making the pieces stick together.

Crown- and Bridge-Work made with Mason Detachable Teeth.

BY DR. W. O. HULICK, CINCINNATI.

THIS exhibition consisted of several specimens of crown- and bridge-work, as made by the use of Mason's detachable teeth, which looked well and seemed to be very strong.

The system appears to be efficient and is probably well worth at least a trial.

A Method of Making Gold Fillings in Artificial Teeth.

BY DR. S. M. WEAVER, CLEVELAND.

The idea in filling false teeth is to get rid or that "horrid false tooth" look of which the patients are very likely to complain. After the tooth is selected and ground to fit in the proper place, the tooth is placed in the mouth and the shape of the fillings in the natural teeth are noticed carefully and the same is reproduced in the artificial tooth by grinding straight through the porcelain facing with a small round cornered corundum wheel, when this is of the proper shape the margins are polished with a fine stone the same as you would in a natural tooth. A gold backing of 24k, 32 gauge, large enough so that it can be burnished up into the cavity, which can be done with the shank of a small round instrument, is then placed on. The surplus gold is then trimmed off leaving enough extra to extend a trifle above the margins of the porcelain. A platinum backing of 32 gauge is then placed over the gold, allowing it to extend out straight with the contour of the teeth, leaving it slightly flush. The pins are then split to hold backing in place. There is now a V shaped space to be filled in with 22k gold, to do this, place the tooth in a pair of self-holding soldering pliers with a small piece of asbestos over the porcelain to keep the oxide of iron from staining it. Wipe the cavity with a very little borax cream and hold above the Bunsen burner, porcelain side down and then gradually carrying it into flame, when the facing becomes red hot turn it over and place the small pieces of gold already prepared into the cavity, taking pains to warm them in the flame before touching the tooth as the chill might check the facing, care must be taken not to remove it from the flame until the soldering is complete. Next place the brush flame of the blow-pipe on and melt down the gold gently, being sure you have enough material on to restore the contour. To prevent possibility of checking throw it into some plaster and allow it to cool. When cool grind and fit the case and you will have the former tooth reproduced in detail. This method can be used in crown, bridge and plate teeth.

The Fell Method of Forced Respiration.

BY DR. HAMLIN BARNES, WELLSVILLE.

He showed the method of using forced respiration as designed and described by Dr. Fell, of Buffalo. Dr. Barnes exhibited apparatus for sustaining life in cases of asphyxia or poisoning and in some cases drowning, he also pointed to some cases in the experience of Dr. Fell where he had saved lives of a number of people where the ordinary means of artificial respiration entirely failed. Dr. Barnes claims that life can be sustained for an almost indefinite time by keeping the patient supplied with oxygen. In some cases he advises the reinforcement of the atmospheric air by the addition of pure oxygen, the apparatus being so constructed as to allow connection with cylinder of pure oxygen.

The Use of Compressed Air for Medicating Purposes.

BY DR. IRA BROWN, CLEVELAND.

Dr. Ira Brown gave a demonstration of the use of compressed air attached to an atomizer with proper shaped nozzles to supply medicaments to the spaces around the teeth and to alveolar pockets that may contain pus. Dr. Brown claims that by this method even the extreme ends of the roots may be reached. He has a tank which he fills with air from an ordinary bicycle pump. He uses a weak solution of formaldehyde, although any good antiseptic can be used.

Impressions and Casts for Use in Orthodontia.

BY DR. V. E. BARNES, CLEVELAND.

The materials used were quick setting impression plaster and the Detroit modelling compound. Also Detroit aluminum trays, special bite tray and some vaseline. In taking impressions care is taken to get accurate impressions of the teeth and gums. They are three in number, superior, inferior and the bite, taken in composition ; there is also a face model taken of one side of face, in plaster. The face is protected with a coating of vaseline, ear is protected with cotton, and the eye protected with rubber and the cloth vaselined. The face impression is waxed and varnished ready to fill.

Casts are then made of the face impression, also the superior, inferior and bite impressions. They are symmetrically trimmed and treated with stearin, to give a polish and wearing qualities.

Removal of Tooth-Pulp by Means of Pressure Anesthesia.

BY DR. OTTO ARNOLD, COLUMBUS.

Dr. Arnold presented an interesting clinic in the anesthetizing the pulp of a superior central incisor. He applies a saturated solution of hydrochlorat of cocain in alcohol on some cotton and places into cavity in which has been made an exposure; over this he lays unvulcanized vulcanite, and by using pressure is enabled to force the cocain into the pulp, anesthetizing the pulp in this case in about ten minutes. In the case presented Dr. Arnold found a constriction in the root, about a line from the apex, and it caused him to make a second application. He was enabled to clear the root canal to the apex with very little pain to the patient.

Use of the Automatic Plugger.

BY DR. W. T. McLEAN, CINCINNATI.

Dr. W. T. McLean, Cincinnati, demonstrated the use of the automatic plugger. He filled a cavity in a superior lateral incisor, posterior approximal surface. The cavity was very accessible, but decay quite extensive. Dr. McLean works very rapidly and uses the automatic plugger altogether.

Gold-Lined Cavity and Tin Filling.

BY DR. C. R. BUTLER, CLEVELAND.

This clinic demonstration consisted of a gold-lined anterior wall of cavity, in the lateral surface of a superior central incisor, body of filling being made of tin—a considerable portion of palatal wall was broken away, which was restored in contour with tin. The principal object sought was to show a *saving* filling in case of frail and badly decayed teeth. (No cheap operation). The six or eight anterior teeth are amenable to this kind of treatment, with no unsightly discoloration of tooth structure.

Bleaching by Pyrozone and Electric Current.

BY DR. DAVID STERN, CINCINNATI.

A BADLY discolored central incisor was bleached by the use of the electric current and a solution of pyrozone. He opened up into the tooth; the root of the tooth had been filled; he did not remove all of root filling, but cleaned the tooth thoroughly, applied the pyrozone on some cotton and then applied the current. He had a successful clinic.

An Ingenious Method of Taking Impressions.

BY DR. J. B. SNYDER, BRYAN.

TAKE first an impression with modelling compound, then examine the mouth for hard places; cut out impression at these points, inserting putty. Then resoften and take another impression. In this way you get a better impression of all portions of the mouth.

Rolled Gold Wire for Poor Joints.

BY DR. S. D. RUGGLES, PORTSMOUTH.

DR. RUGGLES presented a good thing in gold wire rolled out to an extreme thinness; this he uses in those crowns where a poor joint is made between facings and band. He burnishes this wire into space thus formed and then solder is easily flowed over same.

A Wire-Drawing Machine.

BY DR. J. F. STEPHAN, CLEVELAND.

THIS machine consisted of a bicycle chain which was gripped by a device and was operated by crank arrangement, thus getting a steady pull. It was also arranged so as to release grip to take new hold of wire. The whole was mounted on a wooden horse.

Gold Polisher.—Wire-Drawer.

BY DR. W. S. LOCKE, CINCINNATI.

DR. LOCKE presented a machine for drawing wire, which, while very inexpensive, is very powerful, being constructed on the plan of a walking board. He also presented a method, which he claimed was originated by Dr. C. P. Sweeney, of Cincinnati, of burnishing gold-plating with a brass brush wheel and licorice water, which does the work very quickly and perfectly.

Making-over Old Instruments.

BY DR. E. B. LODGE, CLEVELAND.

DR. LODGE demonstrated how he makes use of his old instruments by making them over. He claims he makes better excavators than he can buy, as he makes them to suit each case. His was a very interesting demonstration, as well as being something which we can profit by. We all have spare time occasionally, when it could be put into this use.

Refining Gold.

BY DR. A. A. KUMLER, CINCINNATI.

DR. A. A. KUMLER refined gold in the old manner, dissolving scraps in nitro-hydrochloric acid and precipitating same as pure gold. His method while old was very interesting.

ALL SORTS

Some Cement Experiments.*

BY W. V-B. AMES, D.D.S., CHICAGO, ILL.

"I would add a word regarding the tendency toward crystallization of the liquids of the better class of cements, those in which the acid has not been modified by sodium phosphate only. I wish to specially call attention to the danger of inferior results in using the liquid portion only from any bottle in which crystals have formed, for these crystals represent an essential ingredient of the formula, so in using the liquid portion only, the virtue of the formula is to some extent lost. If the crystals are afloat, or if they have settled loosely to the bottom of the bottle, and can be shaken up, the cement will probably work properly, if the crystals are thoroughly distributed at each using and thus used evenly from first to last, for such crystals will usually liquefy in the mix. If, however, the crystals will not distribute, and are of a bulky, more or less glassy nature, they should, if possible, be liquefied by warming. If this cannot be accomplished the material should be considered useless. . . .

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* Extracts from article in Dental Review.

"The porosity of the large majority of cements depends on their composition. . . . In porous cements we have neither shrinkage nor expansion at the periphery, because there is shrinkage toward an infinite number of centers throughout the mass, and no perceptible change at the margin. In nonporous cements the basic phosphate formed is of a glassy nature and agglutinates the zinc oxide granules to such an extent that the shrinkage will be toward one center, and if the composition is favorable to a dimunition of volume, there will be a shrinkage apparent at the margin. Nearly all of this class of cements, however, allowed to harden under moisture, analagous to use in the mouth, will expand somewhat. I have found only one showing shrinkage in the moist state. . . . . I give the tests of those only prominently before us, as follows, the fillings being made in the steel tubes such as are used by Dr. Black and other in amalgam tests:

Justi's Insoluble expands according to mix . .	0004-0006	inch.
Ames' Metalloid " " " . .	0002-0009	"
Harvard " " " . .	0021-0038	"
Lynton (measurement difficult) expands not less than	.0050	"
C. A. S. (Ash & Sons) contracts according to mix	0003-0007	"

These cements are not equally impervious to moisture, but do all contain phosphates of some metals others than of alkaline group, and constitute the larger part of a distinct class, better as regards porosity than the legion in which the liquid is practically an acid solution of some alkaline phosphate. Whether the fifty points expansion of the Lynton or even the thirty-eight points of the Harvard is advantageous or not, I can only venture an opinion. From twelve years' use of the Justi, previous to about eight years ago, I found that regulating bands, crowns with little retentive form, and inlays were held by that cement in a manner not to be expected of the ordinary material, and I realize now that that four to six points expansion was the secret of it. This experience leads me to be skeptical as to a cement which in the same mass gives thirty or fifty points expansion."

Preliminary Requirements.

In a paper read before the Central Dental Association of Northern New Jersey, and published in *Items*, Dr. Edward C. Kirk, after speaking in general of present preliminary requirements, advantages of manual training, etc., said:

"I am strongly of the opinion that in addition to the manual training studies, mathematics, language, literature, history and especially science studies should be made an obligatory part of our dental high school curriculum, if I may so designate it. With respect to science teaching in the public school course, that wise counsellor in educational matters, President Eliot, of Harvard, has said: 'A rational course in science, rational for the schools, because it affords a substantial training in observing, recording and reasoning, rational for the college because it affords sound preparation for further study of science during college life,—is a great desideratum.' . . . .

"While the termination of the high school course is the correct and logical point of departure at which to enter upon the dental course, not all high school courses furnish the best preparation for that purpose. Therefore, I submit as my closing proposition that the importance of the matter demands that we take up the consideration of a plan of preliminary training for dental study which shall best meet our requirements, and endeavor to have our high school courses modified to that end."

Root Preservation and Obtaining a Bridge Abutment with a Richmond Crown Under Adverse Circumstances.*

BY A. E. WRIXON, D.D.S., CHICAGO, ILL.

The following practical case, after three years' test, serves to illustrate the possibilities of root conservation under adverse circumstances.

The patient, a young man of about twenty-two years of age, presented himself to me with a badly decayed cuspid, attached to which, by means of a poorly fitting band, was a bridge. Under the band the decay had penetrated up almost one-third the length of the root on the mesio-labial surface.

After treating and filling end of root, take a small piece of German silver, thirty-one gauge, make a small tube of it, in size two-thirds the length of root and large enough to admit the pin of the crown. Roughen the outer surface of tube with a sharp chisel, take a bud bur the diameter of which is the same as that of the tube, ream out root to admit tube, then groove walls with cross-cut enamel bur and set tube in with cement, the cement extending down only one-third the length of the tube. Have a small piece of wood in the tube to prevent the cement getting into it. Pack the remaining open portion of root with amalgam down to gum margin. After amalgam is hard trim it and the end of tube, then make cap for the crown.

* From Dental Review.

The idea of the tube is to support and hold in the amalgam, which aids in shaping the cervical portion of root for the crown. Had I simply built up the root with amalgam, omitting the tube, and then drilled into the amalgam for the pin of the crown, I would have dislodged the amalgam and not secured a firm foundation.

After three years this patient returned to me. In the meantime he had lost the first bicuspid on the opposite side, which was to be replaced. After removing the bridge, which consisted of the anterior six teeth, I found the tube and the amalgam firmly intact. I added two teeth to the bridge and reset the same, which has now been in five months and is very firm, giving the patient no inconvenience.

Ordinarily the extraction of a root in this condition would be deemed inevitable. This case somewhat demonstrates the possibility of preserving a badly decayed root and using it to good advantage in crown and bridge work.

Trismus as the Result of Ulcerated Teeth, and the Use of Wedges.*

BY DR. PAUL VOIGT, PHILADELPHIA.

Trismus as the result of ulcerated teeth occurs very frequently, and the patient, becoming alarmed at the disease because of the great distension which takes place around the jaw, accompanied by fever, pain, and debility, calls in a physician instead of a dentist to treat the case.

When we decide what is necessary for the patient to have an ulcerated tooth extracted, it should he done at once, even though the face is considerably swollen; an ice-bag or ice-cold water should be applied externally until the swelling is reduced, and with the use of any antiseptic mouth-wash a rapid recovery will usually follow; but where the disease has made considerable progress, and trismus has set in, a slightly different treatment is required.

I am indebted for the following cases to Drs. C. D. S. Fruh and John F. Roderer, of Philadelphia:

Miss C. Ulcerated lower third molar. The ulceration had been going on for a week; the patient had eaten nothing for several days, and slept very little; the mouth was nearly closed; breath fetid; had been unable to use a mouth-wash. I sharpened several pieces of wood into wedges, placed them between the teeth, and tapped them from time to time with a small mallet. After about half an hour the mouth had opened so that I was able to slip in a lance and cut freely around the abscess. The patient not allowing me to work further at this visit, I ordered a mouth-wash, an application of ice-bags, and made an appointment for the following day. The muscles had relaxed considerably when I saw my patient again, and I was able to wedge the mouth open to such an extent that I could extract the tooth. Continued the use of cold applications and mouth-wash, and recovery was a matter of a very few days.

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* Extract from article in Dental Cosmos.

Miss H. This case had been treated by a physician for three weeks, when, during his absence, one of the gentlemen before mentioned was sent for, and I was called in consultation. Trismus had set in, the teeth being closed within a quarter of an inch; and so much pus had formed that the last physician had used an aspirator to give some relief the day before. The cause of the trouble was a broken-down lower third molar, which had erupted outside the arch. I advised immediate extraction of the tooth. In this case I used wedges which I shaped out of cork, pressing them between the teeth with my fingers, and changing from smaller to larger ones, until in an hour I had the mouth opened so that I could use my forceps fairly well. I found, however, that it was necessary to extract the second before I could extract the third molar. An ice-bag was ordered to be applied externally, mouth-washes used, and a rapid recovery followed.

Systemic Treatment of Threatened Formation of Alveolar Abscess.[*]

BY DR. A. H. PECK, CHICAGO.

The following systemic treatment is of special value in cases of threatened formation of abscess, and especially in cases which have advanced to a stage where it seems impossible to prevent pus formation. By this treatment the patient will be greatly relieved in most cases from the pain he would otherwise suffer, even though pus continues to form.

The chief indications in these cases are to slow the blood current, to quiet the nervous system, and to stimulate the secretions and excretions. This may be done by the use of tincture of aconite and veratrum viride minim doses every half hour; and tincture of gelsemium, one-half minim doses every hour till six minims have been taken. Antikamnia, which acts on all parts of the system as a sedative, given in five-grain tablets, every half hour until five or six of the tablets have been taken, usually results in much benefit. Sulphid of calcium is generally a useful agent

[*] Extract from article in Dental Digest.

in this connection, in doses of gr. $\frac{1}{10}$ to $\frac{1}{2}$. If the patient is constipated a saline cathartic should never be overlooked. A hot foot-bath just before retiring is helpful, and if the patient is still suffering pain and is especially nervous, nothing can be better than the action of Dover's powder on retiring.

Do Oxyphosphate Fillings in Deep Cavities Endanger the Pulp?

The editor of *Items* has written to a number of prominent dentists for their opinions regarding this subject, and from the replies in January *Items* we take the following extracts:

PROF. E. C. KIRK: "I am largely of the opinion that death of the pulp in these cases is due to the near approach of caries to the pulp, rather than to chemical irritation from the oxyphosphate filling, or as otherwise expressed, pulp death would be as likely to occur under any filling where the pulp was as nearly approached." . . .

"It is true that two possible sources of irritation from oxyphosphate are to be considered apart from its physical properties, namely—those arising from the irritating character of certain of its component materials. These are free phosphoric acid and arsenic." . . .

"Before chemical combination is complete, and during the period when resistance to stress is rising to a maximum, if the mix or pellet be placed upon the surface of moistened blue litmus paper, a distinctly acid reaction will be manifested by the formation of a red spot at the point of contact." . . .

"It is quite conceivable that the avidity for moisture of the uncombined acid in a newly placed oxyphosphate filling might lead to its osmosis in the dentinal structure, causing disintegration of the dentine and possible irritation of the pulp in cases of near approach to that organ." . . .

"It is a well-known fact that nearly all commercial preparations of zinc oxide contain slight quantities of arsenic, this latter element being constantly associated with zinc ores in nature." . . .

"In the manufacture of cement powders, the high heat to which they are subjected in the calcination process, the arsenic enters into combination with the zinc, forming zinc arsenite, rendering the arsenic fully inert, just as arsenic when swallowed is rendered inert by the formation of iron arsenite, by the administration of freshly prepared moist ferric oxide as an antidote.

Under these circumstances, I am inclined to the belief that the presence of arsenic discoverable in minute quantities in cement powders may be disregarded so far as any deleterious effect upon dentine or the pulp is concerned where such powders form the basis of zinc oxyphosphate fillings."

PROF. J. TAFT: "I do not believe that the oxyphosphate fillings affect living, healthy pulp that is not exposed, and is covered with a layer of unchanged dentine, having a thickness of thirty to thirty-two Stubbs gauge." . . .

"The pulp cannot be affected by the phosphoric acid unless it penetrates the covering of the pulp. The readiness with which this may be done would depend upon the thickness of the covering, and the presence of free phosphoric acid.

After the mass has undergone the hardening process, there is not, if proper precautions have been used, enough free phosphoric acid to cause any injury."

PROF. G. E. HUNT: "In my opinion a completed oxyphosphate cement filling is non-irritant. Any deleterious action which a cement filling may have on the pulp tissue takes place before this chemical action ceases.

The liquid in the cement is the disturbing factor. Some cement liquids are more acid, and, I believe, more irritant than others. While I have never made the experiment, I will venture the assertion that glacial phosphoric acid in juxtaposition with the living pulp will create serious inflammation. If this be true, the phosphoric acid in the plastic mass will irritate the pulp in direct proportion to the quantity present. As it is necessary to use the cement in an uncompleted or plastic form, it is impossible to avoid this untoward effect." . . .

"When the result is known it will not surprise me to learn that in many cases the chemical action incidental to the completion of the filling is of some days' or perhaps weeks' duration, and that, in the interval, minute quantities of free phosphoric acid are being driven off. During this time these will produce a low grade of irritation highly calculated to depreciate the vitality of the delicate pulp tissue to the point of cessation of function. And the closer the cement approaches to the pulp the greater the certainty of the result and the quicker it will be accomplished."

PROF. M. C. MARSHALL: "Wherever the layer of dentine is thick enough to limit the action of the acid to such an extent that it does not reach the pulp, this organ is still in danger from thermal shock, and I am satisfied sometimes dies under its influence." . . .

"If there is very little sensitiveness, as we frequently find, and the pulp is healthy, the danger is greatly diminished both from the chemical action of the acid and the conductivity of the filling.

The ratio of deaths of the pulp under oxyphosphate fillings is so much greater, in like cavities, than under gutta-percha, that the mere fact of juxtaposition of a foreign substance will not account for it."

PROF. A. R. STARR: "The mass while plastic is irritating because of the phosphoric acid in the combination. I do not believe it is intolerable to the pulp after it has crystallized." . . .

"I believe that the severe irritation caused by placing ordinary zinc phosphate paste over a pulp nearly or quite exposed may eventuate in the death of that pulp; so for that reason, in the cases just mentioned, I dilute the phosphoric acid with water, clove oil or some non-irritating antiseptic solution before mixing with the zinc oxide."

Prof. G. V. BLACK:—"I have no sympathy with the opinion so widely held that oxyphosphate tends to destroy the tooth's pulp. I have had too much experience in capping pulps with oxyphosphate of zinc to think so, and have found that they live too well under this as a capping for me to suppose for one moment that there is anything in the oxyphosphate that is intrinsically obnoxious to the vitality of the pulp. I recognize that many pulps do die under oxyphosphate under conditions illy chosen for capping."

Prof. JOHN I. HART:—"I most fimly believe that an oxyphosphate filling in a deep cavity carries danger to the pulp. My supposition is that the free acid (phosphoric) on the surface of the filling, during the interval between its placement and crystallization, is absorbed into the tubules and stimulates the pulp; some pulps react under the stimulus favorably, others become so congested that they strangulate by pressure at the apical foramen."

Dentures to Substitute Partial Plates.

Dr. HARVEY E. KELSEY presented an exhibit of dentures to substitute partial plates. Small dentures very similar to these have been illustrated and described, but there are two points in their construction to which he wished to call special attention.

1st. As he makes them there is no pressure allowed to come upon the soft tissue, the denture being sustained in position entirely by clasps and lugs upon the adjacent teeth. Exception to this, however, is made when the denture consists of more than two teeth, in which case there should be a small saddle plate extending not more than half an inch inside the ridge.

2d. The construction of the cuspid clasp. The platinum should be burnished around the cuspid, allowing it to pass as far as practicable between the cuspid and lateral on the palatal surface of the tooth and to show about as much as an average gold filling on the posterior labial surface. Care should be taken to burnish the metal very closely over the enamel protuberance, which is fairly prominent on the palatal surface of the cuspid just at or above the gum-margin. The inner part of the clasp should be about three-sixteenths of an inch wide. Remove the platinum and flow 18k. or 20k. solder over it until it is quite heavy. Such a clasp will snap into position and not only support mastication upon the denture to which it is attached, but require considerable force to bring it out. Clasps for the other teeth are made by burnishing platinum around them and flowing solder over it until stiff enough to withstand the lateral pressure in mastication. After the clasps are finished they should be replaced upon the model and a connecting box of heavy clasp metal soldered to them. At the same time the lugs to rest upon the molars or bicuspids should be soldered to the clasp. The skeleton of the denture is thus completed, and it may be placed on a new model (for the first one will be spoiled by the soldering) and teeth ground in and attached with rubber, or it may be finished up with porcelain facings, gold cusps, and solder, as in bridge-work. Dr. Kelsey preferred to do the work entirely on plaster models.—*Cosmos.*

A Method of Refixing a Porcelain Front to a Broken Crown or Broken Bridge.*

BY DR. LEONARD MATHESON.

The following is a case in which I crowned with a collar crown an upper left canine. Some months afterwards the porcelain broke off. I thought it was a suitable case for trying a method I saw in one of the journals, which consisted in soldering on to each pin of the new porcelain face a little tube, passing these tubes through the enlarged holes of the old pins, and squeezing back the tubes on to the back to hold it down, just as a cobbler squeezes down the eyes for his bootlace. That seemed to me rather a good method, and I tried it in this case; but either from want of practice or from clumsiness I failed to get a satisfactory result. Then I thought I would adopt the other method. I joined the already enlarged pin-holes together, and freely beveled the sides of the slot thus made. Then, having adjusted and fine-fitted my new porcelain front, and bent the pins so as slightly to diverge, I smeared phosphate cement all over the back of the porcelain, squeezed it home, cleared away what phosphate was unnecessary, and filled the slot up with amalgam. I saw the case about nine months after I put it in, and it certainly made a very nice joint. The thing was firm and seemed very likely to hold. It goes without saying that the thicker the original gold back is the better. In case of a close bite the method would not be so good.

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* Extract from article in Journal Brit. Dental Association.

How to Remount Teeth of Upper Denture Where Changes in Palate and Alveolar Ridge Make it Necessary.*

BY DR. LEONARD MATHESON.

It often happens that an upper denture comes into one's hands which has done good service, and which articulates well with the lower teeth, but which has to be re-mounted owing to changes in the palate and in the alveolar ridge. In such a case as that one takes an impression either with the plate or otherwise, and one wishes to get the articulating surfaces of the teeth precisely as they were before. One method is to take an over-bite, but a difficulty I have found in so doing is that a very little raising of the teeth when they are set into the wax a second time is enough to throw the whole thing out, and yet it is very difficult to detect the error. To overcome this difficulty I have set into the plaster key a wire, which rests on a prolongation of the lower model and which shows the least rising of the keys in front. That is so, but you may want to alter the teeth in front or put in new ones of a different pattern. There is one thing one has to guard against, and that is, that the plaster will sometimes alter in shape and raise the wire somewhat from the block, so that if it has been lying by for a day or two one ought to see that it is actually down.

Articulation.†

BY DR. GEORGE B. SNOW, BUFFALO.

. . . . If we attempt the use of teeth with long cusps and long overbite we will have conditions favoring the exertion of lateral forces upon the plates, and they will be dislodged. The cusps of artificial teeth, therefore, should not be so long as those of the natural ones. The proportioning of the opposing sets is a matter of considerable importance. The upper and lower teeth should be of such width, relatively, that the bicuspids will come into their proper places and interlock, the same as in the typical natural organs. If they do not do this, and the cusps touch upon inclined surfaces, there will be a tendency to slide the plates upon the gums, and they will be easily dislodged by such treatment. The

* Extract from an article in Journal British Dental Association.

† Extract from article in Dental Cosmos.

teeth must rest upon their opponents so that the plates will be pressed directly home against the gums without developing any tendency to slide.

But how about their contact when the mandible moves sidewise in mastication? If the teeth are so arranged that they only make contact on one side at such a time, there will obviously be a tendency to tip and dislodge the plates. They must be arranged to copy nature, so that some of the teeth may be in contact on both sides of the mouth during all the masticatory movements; so that when the incisors meet edge to edge the molars will touch and prevent the dislodgment of the plates at the rear. When the side movement is made, and the bicuspids of one side touch, the molars of the other side should also touch. The plates, being held up at two or more points, cannot fail. . . . To get the most pleasing effect these points must be remembered, and artificial teeth must be set up accordingly; the central incisors with their cutting-edges rather prominent, the laterals with more inclination from front to rear, the bases diverging slightly, and the cuspids nearly perpendicular and full and prominent at the base.

The bicuspids are next set up, their necks being kept well in, allowing the cuspids by their prominence to shield them from view. Attention must also be paid to the positions of the teeth as regards the alveolar ridge, and they should be set as nearly directly over it as the case will admit of; so that the bearing may be directly on the ridge and not behind it. The lower teeth next receive attention, and, instead of beginning with the central incisors, as before, the second bicuspids are first set up. These have their place, the points of their cusps being directly under the interdental spaces of the upper bicuspids. This insures the proper interlocking of the two sets, and is the important point. The cuspids and incisors are next arranged, the cuspids having considerable prominence at the necks; the incisors, unlike the upper ones, being set up picket-fence fashion. After this come the second lower bicuspids and the molars. These are easily placed so they will come into proper opposition when they are brought together in the articulator, the latter being supposed to have only the open-and-shut, hinge-like motion; but it will be difficult to tell what the effect will be in the mouth, with the various movements of the mandible. Before the teeth can be articulated with any certainty of keeping contact, sufficient to prevent dislodgment of the plates under all ordinary circumstances, two conditions must be obtained. We must be able to imitate with a fair degree of accuracy, with the articulator, the movements of the mandible. We must have the models so set in the articulator that they are in the same relations to its joints that the alveolar ridges are to the temporo-maxillary articulations. Though this latter condition is not usually complied with, a moment's reflection will show its importance. The movements of the mandible are made from the two condyles as centers, and each point in the articulating surfaces of the teeth moves in its own direction, according to its location. If the models are wrongly placed in the articulator, the movement of any particular point will not be the same as it would be in the mouth.

As an instance to prove this assertion, we may consider what is usually termed "opening the bite." The usual operations incident to the construction of the plate have been gone through with up to the arrangement of the teeth, and when they are tried in the mouth it is found that they will be better if they are brought down a trifle and the jaws separated a corresponding amount. The adjusting screw of the articulator is raised to separate the models as much as may be necessary, and the teeth rearranged; but when they are tried in the mouth the articulation is found to be wrong. This state of affairs has been experienced so often that it is a common saying that if the bite is changed in the articulator the teeth will not articulate properly when placed in the mouth. The reason for this is that the jaws of articulators are usually too long, and the models are usually set too high from the centers. Then, the height of the centre of motion above the articulating plane, if it may be so called, is seldom thought of, and are disregarded when the models are set. When the models are set too far from the center, and the bite is opened, the teeth, when placed in the mouth, will touch at the second molars only, and considerable grinding must be done before they can be used at all.

Diphtheria and Dentistry.

A very distinct danger to dentists and their patients exists in the fact that the diphtheria is often present in the mouths of patients for many weeks after all symptoms of the disease have disappeared and the patient is entirely convalescent. Indeed, this disease may be, and, we believe, often is, communicated by those who are not themselves suffering from it, the bacillus finding in the subject to whom it is transferred a more favorable culture medium than exists in the mouth whence it comes. Bacteriological tests have been found necessary before allowing the return to school of children apparently cured of the disease. The bearing of these facts on dentistry is, surely, obvious without much explanation. Dentists whose practice is to any great extent among children, ought to be specially careful. But in all cases the scrupulous sterilization of all instruments, scalers, stoppers, rubber-dam, mouth mirrors, and drinking glasses, is certainly indicated.—Editorial in *The Dentist.*

Eyesight Affected by Diseased Teeth.*

BY DR. L. L. DAVIS, CHICAGO.

In one case, male, between forty-five and fifty years of age, a considerable interference with the powers of accommodation extending over a period of two years. Under advice of oculist his glasses were changed several times. Several of the teeth in superior maxillary were in a diseased condition, one especially as the result of pyorrhea alveolaris. This tooth, the left central incisor, was retained by ligatures and treated for six months but without beneficial result, so was extracted and a bridge inserted. The eye trouble passed away within two weeks after the extraction, and up to the present has shown no signs of recurrence.

The other case was that of female, about forty-seven years old, who after the insertion of a bridge extending from the first molar to cuspid tooth on left inferior maxillary. Some months after the bridge-work was inserted the patient was referred to me for relief from pain, at point of root of cuspid. Finding it necessary to remove bridge and treat root I did so, and the patient then explained that ever since the work had been done she had suffered with her eyes, and that the removal of the bridge had given relief.

Helpful Dental Hints.

I claim no originality for anything I possess, excepting original "sin." But I give these little hints as I've gathered them from chats with my confreres. They were new to me. They may be new to others like myself, who accept good ideas, no matter where they come from.

1. Dark Joints.—If your set has dark joints dip a sharpened point of wood into aromatic sulphuric acid; put a few drops into each joint, let rest a few minutes, wash with water.

2. Do not hammer plaster impression out of your impression cup. Cut off overhanging surplus; hold the cup over a flame, the plaster will fall out.

3. To get a correct bite make the patient lean his head forward; depress his chin until it touches his breast, then bite.

4. To get a good impression with wax, wax and paraffine, or the compound, take impression as usual, but not fully; then remove and gently soften surface over a flame and re-insert, press into place, let it cool.

5. Cotton twisted on the mandrel of the lathe can be made to reach any hole or corner in polishing plates.

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* Extract from article in Dental Review

6. When you have any grey spots in black rubber, try Dr. Barrett's plan of rubbing them with carbon bisulphite.

7. For heating rubber try Dr. Beacock's suggestion of a soapstone slab. The rubber does not stick to it. I always wash every sheet of rubber with a nail brush before cutting.

8. The wire-spring laboratory apron now on the market was first suggested by Dr. Beacock, of Brockville. I wish he would give us more of his good ideas.

9. After using clamps and ligatures and wounding the gum, massage the parts with the finger and camphor or alcohol to revive the normal function of the constricted gum.

10. Paint the model with thick lather of soap before packing. It prevents the plaster sticking to the plate.

11. If your gas bag bursts, coat a piece of vulcanized rubber with chloroform, and press it for a few moments on the break.

12. Try Dr. E. C. Kirk's plan of sterilizing instruments. Soak them for a few minutes in a warm aqueous solution of liquor ammon. fort.—*Dominion Dental Journal.*

Novel Method of Making Zinc Die.*

BY DR. O. P. WOLF.

I cover the model with a thin coating of vaseline and set it on the slab, just as we do when about to pack the same around it. Then I mix sand and plaster in the following proportions: Sand, three parts; plaster, one part; just thin enough to run easily, and pour it over the model, tapping the slab to insure a perfect adaptation to all parts. As it begins to set, I build it up to thickness of an inch above the face of the model, and then allow it to set, I then put it over a low flame until perfectly dry. Then with a knife I cut a narrow groove from the center in front to the center behind, nearly down to the model. Then with one hand on each side I break it apart, take out the model, and put the pieces together again, the fractures are so clean that when wired together the crack cannot be detected.

This gives me a perfect impression, and we then proceed to pour it with zinc. There is just enough plaster mixed with the sand to keep it firmly together, and as it is perfectly dry, I have no trouble with steam.

While my assistant pours the zinc, I gently tap the impression and the slab on which it rests, exactly as we do when pouring a plaster model.

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* Extract from Items of Interest.

It gives a perfect die, entirely devoid of air bubbles or other imperfections. The plaster and sand impressions do not seem to suffer in the slightest. The counter die of lead is made in the usual manner. I have made several on this plan. and in each case have met with flattering success.

BRIEFS.

[Condensed from Contemporaneous Literature for OHIO DENTAL JOURNAL.]

A Good Plate Polisher.—Cotton twisted on the mandrel of the lathe can be made to reach any hole or corner in polishing plates.—*The Dentist.*

A Good Slab for Porcelain Crown.—A carborundum or ruby stump wheel makes a good slab, the post of the tooth being placed in the hole of the wheel.—*J. G. Harper, Items.*

When Using Rubber for Separating Teeth I find it best to secure this with a cord to one of the teeth : then when the patient fails to fill appointment, but comes up later on, the rubber is still there.

Post for Bicuspid Crown—Having occasion to place a bicuspid crown, and having a single post (Davis) only on hand I adapted this one, then soldered a smaller branch to the shoulder for the palatine canal, when I had all I desired.

How to Remove Excess of Varnish from Cavities.—After varnishing a cavity, and before introducing the filling, remove excess of varnish by using small pieces of rubber-dam. It takes up the varnish and leaves no lint behind.—*Australian Journal of Dentistry.*

To Remove Gutta-Percha Points from Root-Canals.—Roughen the point of an Evans' root-canal dryer, heat the bulb, and press the point slowly into the canal. Cool the bulb with a wet sponge, and on removing the point the gutta-percha will come with it.—*Indiana Dental Journal.*

Tip with Gold.—In the construction of bridge work, dummies (in many cases) are much stronger when tipped with gold, than when left untipped. The tipping acts as a kind of cushion to modify the force of mastication. This is more particularly the case with bicuspids and molars than with the front teeth.

Orthoform for Pain after Tooth Extraction.—After the removal of periostitic teeth, if you will pack the sockets lightly with moist cotton dipped in orthoform absolute cessation of pain will result. Its effect upon those trying cases of impacted third molars, wherein the surrounding tissues are terribly congested and in most cases the gum almost covers the occlusal surface of the tooth, is almost marvelous.—*H. C. Kahlo, Ind. Dent. Jour.*

To obtain the Best Results in Filling with Gutta-Percha, be careful not to stuff cavities with large pieces; small pieces not more than a sixth or eighth the size of the cavity work to better advantage. Pack carefully and with force from the base of the cavity, with heated pluggers instead of heating the material. Never apply chloroform to surface of fillings. A good article of gutta-percha rightly manipulated is quite durable, and the results generally satisfactory.—*B. F. Arrington, Dental Brief.*

How to Bemove Stains and Dirt from the Hands.—Place a quantity of sal soda in a shallow dish, in a warm, dry place, and expose to the air. Dessication will soon follow, and from a coarse, lumpy mass it will soon become an impalpable powder. If now the fingers are moistened with water and applied to the surface of the dessicated soda, a small quantity will adhere. Apply with a little water to any surface to be cleansed, and the result will appear magical. Dirt will disappear, without injury to the skin, if the soda be all rinsed off.—*E. J. Waye, Dental Off. and Lab.*

Passing Hints.—I was forcing an aluminum crown on recently when it began to crack at the edge, and I felt for a little while that I was in a dilemma. By-and-by I brought the margins together again, then spliced the break with another bit of aluminum, doubled over the edge in and out, and forced firmly together with pliers. Dressed the outside smooth, reduced the tooth and soon had it in place. I have since tested platinoid in the mouth for other uses and find it soon tarnishes. I find that a tracing of carbolic acid close along the gum margin controls the mucus until the cement is fully set; this is important.—*H. H. Way, Dom. Jour.*

A Means of Introducing Cement into the Pulp-Canal Without its Drawing Away with the Instrument.—It may be done by moistening a small square of blotting paper with aromatic sulfuric acid passing the face of the instrument over that, slightly moistening it; then the cement may be forced up with that instrument without its drawing away, and, by the way, it is an excellent manner of introducing cement linings in teeth. Bibulous paper or pellets of cotton may be moistened with the aromatic sulfuric acid, and the cement taken up on that and carried to the surface and laid over, and then the pellets withdrawn, leaving the cement there.—*Dr. Beach, Cosmos.*

How to Cut Retaining Grooves.—I have seen statements in print of the best method of making these grooves, and I have always understood, perhaps because I did not thoroughly comprehend what was written, that it was merely a question of getting some roughness, and that grooves were cut indiscriminately. However, I observed Dr. Jenkins at work, and saw that when he cut his grooves he endeavored, if possible, to get a filling so that it would be, if I may use a simile that will convey the idea to you, in the shape of a collar button, the groove being cut around the circumference of the filling. Thus he has grooves in the filling that will be in antagonism to the undercuts in the teeth.—*R. Ottolengui, Items.*

Always Insert a Crown with Gutta Percha when possible, in preference to cement, because if the porcelain facing breaks, the pivot or dowel may be readily removed from the root by the application of heat to the remains; whereas this would be impossible if cement had been used. When such a disaster occurs the whole of the remains of the crown would have to be ground away and the dowel drilled out. A long, slow, disagreeable and tedious process to both patient and operator. If it be found that cement *has* to be used to secure the crown to the root, it is best to cover the dowel with several coats of cloro-percha before applying the cement. By this manner, should the porcelain facing break, the dowel may be removed by the application of heat, though not so readily as when entirely set with gutta percha.

Another Step in Prosthesis.—Under this heading, Dr. C. A. Allen, in *Dental Digest*, cites a case where the right cuspid and left second bicuspid alone remained in the arch.

To remove them seemed almost a crime, as they stood firm and unyielding in their sockets. The remedy he applied was the reduction of the bicuspid to a "stove-pipe" shape, that it might receive a platinum cap, gauge 30, with long bearings and much firmness. The cuspid was treated in the same general manner, except that an "open-face" was substituted for the "shell" crown of the bicuspid. With caps in position a bite was secured, and this was supplemented by a perfect plaster impression.

With the model poured and the bite well defined upon an articulator, the outer or "removable caps" were nicely fitted to the artificial tooth coverings. The bicuspid was of 22k. gold, gauge 30; the cuspid of the same, slightly reinforced at its weak points, notably on the labial surface. To these were soldered "lugs." For the purpose of rigidity in the finished piece a "strengthener" of platinoid was carefully shaped to describe the entire arch from heel to heel. When in the position desired this was soft-soldered to the crown lugs and all the parts, now united in one piece, were placed upon the model. Teeth were selected and arranged, the case carefully waxed up, packed and vulcanized on low temperature time, and finished as usual.

Rules for Crown and Bridge Work. Dr. Theodore F. Chupein, gives the following hints in the *Office and Laboratory*:

Always use Straight Pin Teeth for making crowns, or for dummies when possible. Teeth with the pins inserted in this way are stronger than when inserted crosswise. Even if a part of the lower pin be ground away, in adjusting it to the face plate, a straight pin tooth will be found to be stronger.

Use Teeth of Proper Width.—If a tooth be too wide to enter a space, it will be preferable to get one of the proper width; but if it must be ground on the side, it is better to grind from the *distal* surface of the tooth than the mesial, as the mutilation of the tooth by grinding will be less apparent when the grinding is done on the *distal* edge than the mesial.

Run Impressions with Fusible Alloy.—When impressions of the teeth which are to be used as buttresses for the bridge are taken, it is best to run these impressions with fusible alloy. But before fitting a gold buttress crown to such a die, it is well to cut the die all around at its neck with a graver, so that the gold crown will go slightly below the gum at its free margin so as to prevent the ingress of food at these points.

It is Best to Grind the Tooth Full Short to accommodate it to the antagonism, because, whether the crown be secured to the root with cement or gutta percha, either of these materials will cause a slight protusion, and hence will cause the antagonizing tooth to strike the tooth of replacement, necessitating the grinding of the porcelain facing on its cutting edge, which always mutilates it and gives it an unnatural appearance.

Back Teeth before Grinding.—In making crowns on dummies, it is better to *back the tooth first*, before any grinding is done, for the tooth is stronger then, and the pins may be well rivited to the backing. If the backing is put on after the tooth has been ground, and the pins have been encroached on by the grinding wheel, a part of the tooth may be fractured when riveting the backing. This would not be the case if the packing is put on first.

In Assembling the Parts of Bridge Work, the crowns should be fitted on the buttress teeth, and the dummies gummed in position between with hard wax. Before the hard wax gets brittle, the teeth should be antagonized, and the masticating surfaces of the dummies should not be permitted to touch the antagonizing teeth hard. At least the space of *three thicknesses of writing paper* should be left between these occluding teeth. If attention be not given to this, the operator may look out for the fracture of the porcelain facing, even though the veneers may have been tipped.

In Adding a Solid Gold Tip (made by stamping up a piece of 22 karat gold on the die plate, and filling the inside with gold of a lower (18) karat, to a porcelain veneer, to be used as a dummy in bridge work, it is best to solder the solid tip to the backing of the veneer, before the veneer is adjusted by grinding to the articulation. If the grinding of the veneer be done *first*, it may be ground *too short* to make the proper articulation with the opposing tooth, but if it be done *after* the solid tip is added to the veneer, *the proper adjustment* can be readily made with the occluding teeth.

Dummies Should not Touch Each Other.—Be careful in assembling tipped or untipped dummies, to see that they do not touch each other by a space equal to the thickness of writing paper,otherwise you may look out for a cracking of the porcelain teeth or veneers. These cracks may not show at the time of insertion, but are there nevertheless, and we will be much chagrined a short time after insertion to have the patient return with a dummy or two broken off, necessitating the removal of the bridge for repairs, and the consequent mutilation of the work. This rule applies as well to plate work as to bridge work.

EDITOR'S NOTES.

Advancement of Dental Education in England.

In the dental curriculum that has been in use in England the choice of subjects had to be regulated by the existing education for the M. R. C. S., a diploma which gave its holder the right to be placed on the Medical Register.

But medical education has developed and the course prolonged to five years, and examinations are held in all the subjects of the curriculum. A Conjoint Board has been established and it has been deemed advisable to have a new dental curriculum.

Regarding this an editorial in the *Journal of the British Dental Association*, states that:

"The evolution that has taken place in medical education has naturally extended to dental education, and during the new year the new dental curriculum will come into force; in future every subject included in the scheme of dental education will also form part of the test examination.

The dental student of the future, therefore, will have to pass an examination in chemistry similar to that passed by medical students, but it will be permissible, and perhaps advisable, to pass it during the term of apprenticeship. When the lectures on Dental Metallurgy and Dental Mechanics have been attended, and attention has been given to such practical work as can be accomplished in six months, the student will be able to present himself for examination in these subjects; the remainder of the curriculum, viz., Dental Anatomy and Dental Surgery, and the subjects taken up at a general hospital, may then be proceeded with, and at the expiration of four years, dating from the time of registration as a student, the diploma of L. D. S. may be obtained.

Among other wise changes in the curriculum we note that one course of lectures in each subject is to suffice, the old second course being replaced by a course of practical demonstrations in each subject, and we welcome an additional course of five lectures on the Surgery of the Mouth.

The evolution of our curriculum has been preceded by an evolution in the examination for the dental diploma. At one time there was no practical examination, but about fifteen years ago tests in filling and the treatment of irregularities were established, and these lasted for about three hours and a half; later, a similar period was devoted to the subject of Mechanical Dentistry, a whole day being allotted to this portion of the examination.

As it now stands, it would, in the opinion of those best qualified to judge, be difficult to instance a qualifying examination in any profession which is more thorough or more satisfactory.

Some of our members desire to see what they call a higher diploma in dental surgery, but so far the expressed opinion of the Association in conclave, as was shown at its last Annual Meeting has negatived the proposal.

It is, perhaps, hardly worth while to speculate upon future developments. The curriculum may possibly be extended to five years; it is the opinion of many good judges that a more thorough knowledge of anatomy and physiology should be required from the dental student, that the curriculum should include the subject of biology, and the first and second examinations for the Conjoint Board be made compulsory; but whatever the changes in store for us may be, it is safe to predict that they will be no less wise and no less judicious than those ushered in with the year 1900."

Practical Use of X-Rays in Dentistry.

After Roentgen's discovery had been made public there was much speculation as to whether X-Rays could ever be successfully used in dental practice. First experiments along this line proved futile and it promised of little value to dentistry, but since tubes have been improved and the character of the rays more fully understood, results are being obtained that seemed impossible heretofore. For different kinds of work, different vacuumed tubes are now used, which overcome the objections of long exposures for skiagraphs, and the resulting burns experienced by earlier experiments.

We publish in this issue, an article by Dr. W. A. Price, on the practical application of the X-Rays, which demonstrates conclusively what excellent results may be obtained and of what practical value the X-Ray promises to be in dental practice.

This article is of great interest and value to every dentist and we hope all our readers will peruse and carefully study it.

Possible Solution of a Mystery.

Early in January the daily press reported a mysterious explosion heard in the western part of Ohio. One dispatch stated that, "aside from the loud report of an explosion a deep rumbling sound seemed to sweep across the heavens, and buildings in several counties were shaken. The shock was felt throughout various portions of Ohio. (*And perhaps extended as far east as New York. Italics* ours.—Ed.)

The newspapers stated that people saw falling stars in the day time, one man declaring that a bright light, apparently a meteor appearing to be about the size of a man's hat, passed in a northeasterly direction with "amazing speed." (Hot-shot from southwest (?)—Ed.)

A few days after this news was spread before the public we received some verses from an anonymous writer.

It is seldom that we publish anything anonymous, but this strange coincidence, together with the mysterious information contained, led us to conclude that possibly something of some kind had happened to some one, sometime, somewhere, and that in case of a possible future inquest the aforesaid verses, which subsequently follow, might prove useful evidence, and so we publish them herewith:

Two hunters went hunting a Hunt man one day
And found him alone in his lair.
They hit him a "biff," and stole softly away.
He seemed quite asleep in his chair.

But lo! and behold, when the next month began,
Explosions were heard by "de gang;"
This editor man, from out old Indiann',
Rose up and came back with a "bang!"

Moral :———.

OUR AFTERMATH.

Hydrogen a Non-Metallic Element. The last doubt as to the possibility of solid hydrogen having a metallic character has been removed since Prof. Dewar's late experiments, and for the future hydrogen must be classed among the non-metallic elements.

Porous Glass—has been introduced into Paris. It admits air by fine holes which do not cause a draught and is quite transparent to light, so that its hygienic advantage over ordinary glass is considerable. A French doctor has also brought out a double pane by which the fresh air entering from below passes up between the two sheets of glass and out at the top into the room near the ceiling.

As Others See Us.—Referring to the competition of the cheaper dental colleges in the United States, says the *Dominion Dental Journal*, Dr. J. L. Williams, editor of *The Dentist*, says, "The best thing that could happen in the interests of dentistry in the United States, would be the destruction of two-thirds of the dental colleges, and the reduction of the number of graduates turned out in about the same proportion, and there are a few wise men over there who see this clearly enough."

GOETHE AS AN ANATOMIST.—Galen noted an intermaxillary bone in animals, and also ascribed them to man, but centuries later Camper claimed that the lack of these bones is an essential mark of distinction between man and animals, especially the monkey. Goethe revived the discussion, and after considerable research compelled the recognition of the site of the incisors as rudimentary intermaxillary bones. He also tried to prove that the skull is but a higher developed vertebra, and urged that the three portions of the temporal bone should be considered distinct. –*Jour. A. M. A.*

THE TEETH OF HORSES.—Some years ago an interesting test was made by a New York parcels delivery company which had 609 horses in constant use. Twenty-five were indiscriminately selected for proper dental treatment, and separately weighed. Their oats and maize were reduced two quarts per day. After the first a great improvement in their condition was apparent, continuing during the second and third months, when they were again weighed, and it was found that an average increase of 18 lb. per head was the result. The test lasted during the hot months of July, August and September, when flatulent colic was very apparent in the stable, yet not one single case had occurred among these twenty-five horses. Since this trial, and whenever a car-load of newly purchased young horses arrive, it is considered a waste to feed them until their teeth are examined and put in proper shape.

THE CARE OF THE EYES.—On arising in the morning the eyes should be bathed gently in cold water—twenty "passes" are said to be decidedly strengthing. While using them closely they should be rested at intervals of an hour or two, for the strain of constant reading or sewing is like that of extending the arms at a certain height immovable. Imagine the taxing of the eyes, which cannot complain save after years of irreparable neglect. When dust settles in the eyes warm water will sooth them of any inflammation; rose-water is extremely refreshing, but it should be bought in small quantities, as it keeps but a short time. Five cents worth will give a daily eye bath for several weeks. Tea leaves and alum-water were the eye tonics which our grandfathers used; but in these modern days of absolutely hygienic and antiseptic simplicity, water, especially in a distilled form, is considered powerful enough.—*Harper's Bazar.*

QUEER ORDERS.—A Jersey City druggist is making a collection of the queer orders he receives from people who send children to the store for things they need. Here are a few of them: "The child is my little girl. I send 5 cents to buy sitless powders for a grown up adult who is sike." Another reads: "Dear doctor, please give bearer 5 sense worse of Auntie Toxyn for to gargle babis throte and obleage." An anxious mother writes: "You will please give the little boi 5 cents worth of epecac for to throw up in a 5-month'-old babe. N. B.—Baby has a sore stummick." Another anxious mother wrote: "My little babey has eat up its father's parish plasther. Send an antedote as quick as possible by the enclosed little girl." The writer of this one was evidently in pain: "I haf a hot time in my insides and which I wood like to be extinguished. What is good for to extengush it? The enclosed quarter is for the price of the extinguisher. Hurry, please." –*Exchange.*

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CONTRIBUTIONS.

A NEW FORM OF CLAMP.*

BY H. F. HARVEY, D. D. S., CLEVELAND, O.

I have no paper to read and very little to say, so that I will not detain you long. The program calls for a new form of clamp. Sometimes we present something which we think is very new and we find it to be quite old.

We have many clamps on the market very well adapted to the ordinary forms of teeth, but occasionally they are utterly useless. I think all of us have had the experience of finding teeth on which it was very difficult to get any clamps to hold and retain the rubber satisfactorily, especially those molar teeth which are not thoroughly erupted or are very conical in shape and have many abnormal forms.

The clamp I have been using in such cases is one of my own design and has given some satisfaction, and I think perhaps embodies a different principle than has been applied before. You are all familiar with the anatomical form of the molar, the largest part taken bucco-lingually is very near the gum line and sometimes it is even below this, especially in teeth not fully erupted.

*A talk at Ohio State Dental Society, December, 1899.

In these cases it is necessary to force the ordinary clamp down quite a ways to get it to hold and sometimes then we are not able to do it, and all of this is not very pleasant to the patient. If you will examine the tooth from the other direction, mesio-distally, you will find the crown quite bell shaped, the largest diameter being near the occlusal surface, and if you can get a clamp with reaches around the angles of this tooth and get a grip mesio-distally, it will hold without going so low, and that is the principle utilized in this form of clamp.

This clamp instead of being made of one piece of flat steel, as they usually are, is made of two wires of different sizes and united in the center of the bow, as I will show you.

I have used different materials, German silver, steel wire, etc., united together with soft and hard solder, but lately I have adopted piano wire, using soft solder to bind together, in this retaining the temper of the wire, which is better than any I am able to give it.

These drawings will give you an idea of the clamp and its separate parts. The anterior wire is heavier than the one back, because the leverage is greater, and you need a stronger spring. The points are bent around to grasp the tooth in the mesial and distal angles. These points adjust themselves until the forces are equalized, when the force or pressure at each point will be directly toward the center or long axis of the tooth. Each point acts independently of the other, so you do not get any rocking of the clamp, the grip being at the extreme ends. Also, if you force the clamps down they are not nearly so painful as other clamps where you have a single surface.

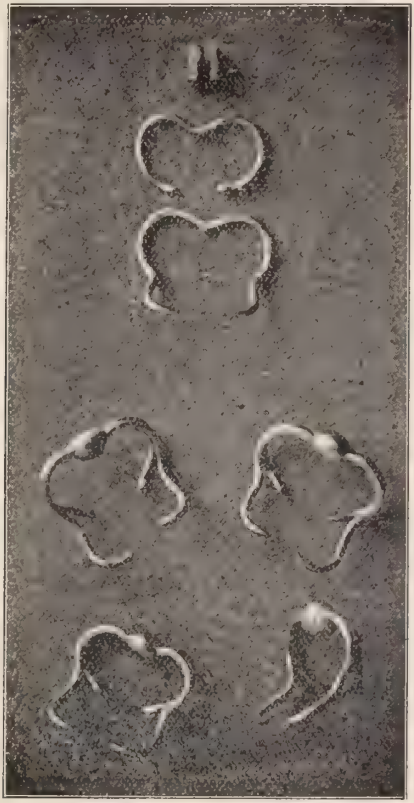
This form of clamp is not as well adapted to teeth having large approximal cavities, unless the points can be carried below the cavity.

The size of anterior wire is .043 inch or No. 19 English gauge.

The size of posterior wire is .036 inch or No. 20 English gauge.

In bending the wires to proper form, I use a pair of ordinary bending-pliers, first making the depression in the middle of bow, and continue the bending each way, finishing at the points.

It is necessary to slightly flatten both surfaces of wires where they come together and set in the matrix, to prevent rotating. The depression in the bow at this point is for this purpose also, as it gives greater bearing surface. The points that come in contact with the teeth should also be flattened. The matrix should be of steel and I make them by filing out of an old excavator handle.



1.—Matrix.
2.—Posterior wire.
3.—Anterior wire.
4 and 5.—Pair for superior molars.
6 and 7.—Pair for inferior molars.

The wires must fit *closely* (TIGHT) in the matrix, depending on the soft solder only to hold parts in position, and being careful that it does not flow far from matrix. The matrix is finished up after soldering. The tension of clamp may be varied somewhat by the size of the bow as well as size of wires.

I have here a number of teeth set in plaster which vary considerably in form and size; also one of the clamps. I will pass them around with this clamp-forcep, so you may see the clamp and its adaptability to various forms of teeth.

DISCUSSION.

DR. C. R. BUTLER, Cleveland: I have a few words to say in commendation of the clamp which Dr. Harvey, in his modesty, has presented. There is a principle embodied that I have not found in any other form of clamp. I have put them to a practical test and find that there is adaptation of considerable range. These presented are for the molar teeth, but they may be made for use on bicuspids as well.

H. L. AMBLER, Cleveland: The Harvey clamps are both unique and practical. They are unique because they are made of piano-wire, and as we often say of many inventions when we see them, "It is a wonder that someone did not think of them before," but it remained for Dr. Harvey to produce this invention, notwithstanding dentists and manufacturers have been making clamps for thirty years. They are practical because they have a bearing on the teeth both mesio-distally and bucco-lingually, owing to their peculiar construction, and also because with a pair of pliers, they can be slightly changed in form and made to fit a little larger or smaller tooth, or an abnormally shaped one. In cases of partially erupted molars, they will hold on better than any clamp with which we are familiar.

DR. HENRY BARNES, Cleveland: Dr. Harvey loaned me his clamps for a few days—also explained how they were made. They are simple of construction, yet difficult to shape at first. They are the best form of clamp yet devised, in that they are automatic in their action; out of one's way especially when operating upon cervical cavities in the molars. They can be used when no other clamp will hold and are not as painful as are other forms.

DR. W. T. JACKMAN, Cleveland: Through the kindness of Dr. Harvey I was permitted to try this new clamp on a conical, superior right second molar—a tooth on which I used, or tried to use, an exceedingly convex (gumward) clamp, and one almost stiff enough, apparently, to crush the tooth, but it would not hold. With the Harvey clamp I adjusted the rubber, used a dam holder with three points of attachment drawing the corner of the mouth well back, yet the clamp held nicely till I inserted three crown fillings and, to my surprise on removing it, it seemed to have but slight hold, but it clamped in such a way that slipping was practically impossible. It will no doubt prove to be an excellent aid to the amamentarium of the operator.

Dr. J. F. Stephan, Cleveland: Having had the opportunity during the past few weeks of using the clamps Dr. Harvey has shown us, I would like to say a word in appreciation of their good qualities. They certainly fill a long-felt want in being so nearly universal, and especially in fitting those cases where the crown is only partially erupted. In these cases the mesio-distal force is brought into play and it is surprising how firm they hold, exerting as little force as they do. I think it would be impossible to injure the enamel of a tooth using one of these clamps. The fact that they can be bent so as to fit the crowns of malformed teeth is a very valuable feature and one which will certainly be appreciated. I believe they deserve special notice, because they will help us when all other clamps will fail.

Dr. Fletcher, Cincinnati: For one I feel very grateful to Dr. Harvey for having presnted to us what seems to be a long-felt want in the principle of making clamps, for what he has produced certainly must be efficient and satisfactory, and I wish to thank the doctor for what he has done in that line.

A METHOD OF CAPPING DENTAL PULPS, AND SOME RESULTS OF TWENTY YEARS EXPERIENCE.*

By J. R. Owens, D. D. S., Cleveland, O.

The treatment of exposed pulps of teeth is a threadbare subject; but so long as the results obtained by different operators are so varied, it may remain a fit theme for our consideration: that we may learn, if possible, why one person succeeds in certain methods and another fails. Why one class of operators proclaim that they destroy all exposed pulps and another class tell us they undertake to preserve all exposed pulps: with the great middle class swaying between these extremes. Extremists are seldom good patterns to follow. The conservative man makes the fewest mistakes. But it will be well to consider which conservatism we should espouse, constructive or destructive. Generally speaking, I believe the former. This would place us upon the side of protecting and preserving the dental pulp for its normal functions.

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*Read before the Cleveland City Dental Society.

We may ask why efforts to do this are not uniformly successful? It is due to many causes. To enumerate a few: lack of proper method; lack of care, judgment and skill.

Whatever comes in contact with the dental pulp when exposed should possess the qualities of being non-irritating, non-absorbent, non-destructable, a non-conductor of heat; and the capping should possess rigidity—neither expanding nor contracting. A substance may have no irritating quality when placed over the pulp, but by absorbing the serum of the blood and moisture of the mouth in time become an irritant through decomposition of those fluids. Asbestos is of this order, and all mixtures of essential oils and oxide of zinc. There is no cement formed by such mixtures. The essential oil disappears, leaving the oxide of zinc powder to absorb the fluids of the pulp, which in time decomposes and, as stated above, becomes an irritant. Other substances are bland to the pulp and non-absorbent for a time, but are destructable, namely, the various varnishes. After a time they granulate, absorb the serum of the blood and other moisture, and this decomposes, and they become "persona non grata." In some way, I am not prepared to say how oxyphosphate of zinc is incompatible to the exposed pulp.

I bring before you a report of my labor for twenty years, as far as it pertains to capping dental pulps. The report is not exhaustive as far as the history of each case is concerned, for that would be impossible for many reasons, and perhaps be unnecessary; but I hope it will be sufficiently explicit to make deductions as to the success of my method of doing such work.

Each case reported is one of true exposure. I have discriminated, of course, in selecting exposures for capping. If one or two horns of the pulp were exposed—and sometimes when the exposure extended from horn to horn—if the pulp was healthy, I have not hesitated to try to save it. By healthy condition, I mean no breaking down of pulp tissue. No serumnal exudation nor pus formed. If the patient was prompted to come to me by pain resulting from the exposure of the pulp, that would not necessarily be against an effort to save it unless that pain had been of long standing, and congestion had begun. I have drawn the line at congestion, extravasation, and suppuration. I have not been one to believe in partial amputation of the pulp and the preservation of the remainder.

The twenty years' work done and results are as follows:

Year	1878	'79	'80	'81	'82	'83	'84	'85	'86	'87	'88	1889	'90	'91	'92	'93	'94	'95	'96	'97	'98	Total,
Pulps capped	68	91	93	108	129	84	113	110	114	103	86	69	54	51	66	62	69	64	51	46	44	1,675
Died	3	3	1	3	3	2	1	3	2	2	1	0	2	1	0	3	1	1	0	1	0	30

Total pulps capped, 1,675. Average, 88.
Total pulps died, 30. Per cent, 2.

You will observe the number of pulps reported as having died is equal to less than 2%. I have no doubt there were many more, but these are those that have come back to me sooner or later. It is quite probable others have turned up to be cared for by my fellow practitioners but the large number I have been able to follow, and have demonstrated that the pulps are still alive by inserting fillings in other parts of the tooth, and other tests, have led me to believe that an allowance of 5% for failures is ample.

There is another phase that has undoubtedly influenced many dentists toward the destruction of the dental pulp. The preparation of the cavity under such circumstances is often extremely painful to the patient, and rather than be called a cruel, heartless man by the unreasoning, short-sighted patient, the dentist makes short work of the pain by destroying the cause of it, to the present delight of the patient, but often to his future lasting regret. It seems to me it is the honorable province of the dentist to do what is best for the patient, and not be influenced by the patient's unwise and ignorant requests; just as a kind and wise father will not listen to unwise requests of a child, although by refusing him the child may be unhappy for a season. The patient is the child in matters of dental knowledge, and we should feel in honor bound to do the best for him.

No pulpless tooth is as good, no matter how skillfully it is treated, as one with a healthy pulp inside. So it seems to me our highest obligation in this matter is to preserve the pulp alive wherever it is possible.

If my failures had been 25% I should still feel it my duty to continue in my efforts to save the pulp. I realize that the same method which I pursue might not be equally successful in other hands, but with skillful endeavor I believe it may be approximated.

I will now endeavor to describe my method of capping pulps.

After breaking down all weak walls and preparing the margins of the cavity as I wish it to be for filling, and having removed the greater part of the decay about the margin of the cavity, I adjust the rubber dam. Having dried the cavity and medicated it with beechwood creosote, I proceed carefuly to remove the decay with sharp excavators. By working in a way to give least pressure to the broken down tissue over the pulp, the least pain to the patient will be realized. All decayed dentine should be removed, unless it be the thinnest possible layer directly over the exposure, occasionally wiping out the cavity with a creosoted pledget of cotton, for two reasons: It relieves the pain produced by the pulp exposure to the air, which is lower than the normal temperature of the blood. The creosote has an affinity for water, so it withdraws it from the dentine and enables you to detect the degenerated dentine. You will recognize this after drying the cavity, by the dentine being of a whitish, dead appearance, instead of the clear, translucent appearance of healthy dentine. After the cavity is thoroughly cleaned, if there has been a hemorrhage of the pulp, remove the blood by gently wiping the cavity with a pledget of cotton saturated with pyrozone; dry the cavity, and lastly wipe it with cotton medicated with creosote; dry the cavity again, and it is ready for the process of capping.

If there is considerable exposure cut a piece of No. 8 tin foil just a trifle larger than the exposure. Prepare a tiny pellet of cotton to be used as a pad. Then grasp the disk of the tin foil by suitable pliers, cover one side of the foil with a creamy solution of chloropercha, and quickly and carefully place it over the exposure. With the tiny cotton pad press gently the edges of the foil disk to the dentine, being careful not to press directly upon the exposed pulp. With the warm air blast evaporate the chloroform, and the pulp is ready for capping. If there is but a very slight exposure this protection of foil and chloropercha is unnecessary.

For capping the pulp I use oxychlorid of zinc. And of the various preparations I prefer that known as "Houghton's Os-Artificial." This oxid is ground to an impalpable powder, so there is no granular feeling as in many of the oxychlorid preparations.

Before mixing the cement I prepare one or more small pellets of cotton to be used as pads. Mix the cement quite stiff and knead it between the fingers into a small wafer just large enough to cover the exposure nicely, and quickly carry to place and with the small cotton pad tuck down the edges, being careful not to press directly over the exposure. Allow this to set for five minutes, when you can prepare as much more cement as will be necessary to fill the rest of the cavity, leaving it in shape you wish it for the outer filling. This cement is also mixed quite stiff. After thoroughly kneading it between the fingers and shaping it to go into the cavity, if you give it a firm squeeze, it becomes more plastic, when it should be quickly carried and pressed to place. Cut away the surplus before it sets.

There seems to be a lack of uniformity in the time required for the Os-Artificial to set. I prefer the medium quick-setting or quick-setting for capping pulps, rather than the slow-setting cement.

The irritation of the chlorid of zinc lasts only while the cement is setting, and a stiff mixture sets more rapidly than a thin one. After setting the thick mix is more dense.

The objection to oxichlorid of zinc for capping pulps has been chiefly among those who have used a creamy mixture for flowing over the exposed pulp. I should expect death to ensue in each such case where there is so much free chlorid of zinc to attack the pulp. With the stiff, putty-like mixture, and forming it into a flat wafer, it is easily possible to cover the exposure without encroaching upon the pulp. Once the cement is set all danger is over.

The result is a protection that is non-irritating, non-destructable, non-conducting substance that neither expands nor contracts, and one that has no superior as a stopping of decay where the cement is not left exposed to the fluids of the mouth.

SALIENT POINTS FROM DISCUSSION.

DR. HARVEY said no one would question the idea of a tooth with a live pulp being superior to one from which the pulp had been removed, and we should make an effort to save the pulp, especially in the teeth of young subjects and in children up to 12 and 14 years of age, as in these cases we could cap with greater success than in older persons. He thought it would be interesting to know whether Dr. Owens had kept a full record of all cases of exposure, and in what proportion he had destroyed the pulp. He thought the profession in general rather negligent in keeping accurate records of such operations, and hoped that the younger members would adopt the plan.

DR. STEPHAN: I don't cap many pulps. I cap only those in the teeth of young persons or children where the exposure has been made accidentally. The only experience I have had with capping pulps that I remember very vividly was in a case where the pulp was exposed accidentally. This was when I was a student in Chicago, some nine years ago. The pulp was capped by striking the floor of the cavity with copal-ether varnish, then a piece of glazed paper the proper size to fit the exposure, and that was dipped in copal-ether varnish and placed over the exposure, and the oxid fluid put over that. I know it is there, because I operated on it two months ago.

DR. VAN DOORN: I would like to ask Dr. Owens if there is any soreness or tenderness in a tooth in the first two or three days after the pulp-capping process?

Dr. Owens: No; for a day following there may be some uneasiness, but after that I expect no uneasiness whatever.

Dr. Price: Reading over the paper, I was struck immediately with this question: What of the other 95 per cent does he know? I am afraid all of my failures do not come back to me, and it is a great question in my mind if Dr. Owens knows the history of all the cases that he does not report. For example, he says later, that the estimate would be 5 per cent for failures. How does he know that the cases that have not been presented for later corroboration have not some of them been failures? I hope they have not; but that seems to me to be an open question. Personally, I think the worst failures I have made since I started in dentistry were in my attempts to cap pulps.

Dr. Siddall: I have used this oxid chloride of zinc for capping pulps, and in many instances that I know of, successfully; but nothing like the number he speaks of.

Dr. Bell: Any time during the 20 years that I have been in practice, where I have recorded a case where some non-conductor was necessary, it has gone on record so that I might present them in toto without going through every one. In Allport's Journal a case is given where, if there is any disturbance, you can refer to the book and tell whether that nerve in that tooth was alive without even diagnosing it. They can tell the condition it was in when it was capped. That's invaluable to us and to the patient. It is our custom, and has been for a long time, in special cases that are liable to get out from under our hands and from under our reach, to inform the patient of just the condition of affairs, so that in case of trouble he may not be obliged to call upon the dentist unintelligently. The use of carbolic acid has been spoken of. Most of us have learned that carbolic acid is a dangerous remedy to use upon any of the soft tissues or anywhere upon the surface of the body, to say nothing of an exposed pulp. It destroys the tissue; and to apply it to an exposed pulp would only mean suppuration of the tissues. And to apply carbolic acid and then cover up the destroyed tissue would only mean suppuration. I have long since learned to place two substances over the dentine. I have for a number of years kept a small assortment of disks made of the thinnest tin, say No. 60, so that the capping material may be carried from this little disk and placed over the dentine of the exposure; the tin being a non-conductor, helps to lessen the irritation that is liable to come through thermal changes.

Dr. Barnes: My experience has been that not only have the pulps of teeth died in which the nerves have been exposed and were capped, but many of those teeth have died which have had protected nerves where there was no actual exposure. I have had quite a little experience along that line, and my experience is that these cases, when they present themselves, are the most difficult of treatment. They go on frequently for a long time, troubling the patient more or less. They are called lame teeth, sore teeth, and the patient goes on for quite a while before any acute trouble presents itself—before the nerve dies. Sometimes dissolution is very rapid, and sometimes very slow. It has been claimed to-day that the decay which is full of bacteria is the cause of the death of the pulp. I am inclined to believe that there is a great deal of truth in that statement. If that is so, how much more true is it if the nerve be exposed—the pulp exposed. Then, when we have had the pulp exposed by disease—I don't mean by accident—and when the pulp has been exposed for any length of time, we have disease of that pulp; bacteria have entered into it. Now we go along and we place over that exposure creosote and other things, and we bury these bacteria within that chamber to act detrimentally on the pulp. I would like to be able to cap pulps; but when the experience of the past comes before me I say, I'd like to see the man that can convince me.

Dr. Whitslar: Suppose we have a cavity of decay in a tooth which has prevailed for a long time; having done so the tubuli are infected by micro organisms, and they extend toward the pulp, and doing so they break down the dentin, and the result is leathery decay. Now, what is leathery decay? It is the residue of the dentin. It is produced by bacteria, by chemical reaction. The chemical reaction of this residue is acid. The fluid which pervades the tubuli at this point is pervaded with fluid which is acid in reaction. This acid fluid is maintained there some time by the leathery decay, and acts as an irritant to the pulp. I never heard this theory advanced. It is a thought of my own, that this acid reaction irritates the pulp and causes a lessening of the vital portions of the pulp, and any attempt to cap a pulp of that nature will only result in death. Where there are extensive portions of leathery decay which is acidified, we cannot hope for success in the capping of such pulps. I believe in capping such pulps which are recently exposed. The methods proposed by Dr. Owens I believe are of the very best order. There is one method I would like to speak of, and that is using a metallic filling, for this reason: All cements are irritating, as Dr. Owens has said; and in some exposures of recent origin it is necessary to have something which is irritating; and I would use in those cases, where there is a healthy body, merely the tin foil or gold foil, carefully laid over the exposure. This produces a healthy reaction, and the old cells are incited to activity, which results in the deposit of secondary dentin, and the pulp is saved in that manner. Dr. Bell spoke of using carbolic acid to produce suppuration. That burning of the pulp may result in its death from the chemical shock; but as to the production of suppuration, I differ. Suppuration is not produced by chemicals alone; it is produced by the action of bacteria. Carbolic acid may carry along with it the micro-organism which will produce suppuration, and then suppuation will result.

Dr. Wilson: If there is a chance of saving the dental pulp, I believe we should do it. But history has shown that when the operation did not prove as successful as we would like, that the profession would go to the other extreme, and that has been the case with this. Twenty years ago it was said every pulp should be saved that possibly could be saved, and now we honestly believe that if there is an exposure of the pulp there should be no attempt to save that pulp. I feel that the time is coming when we will try to save pulps, but I don't believe we shall be satisfied with simply trying to save them in the way that the profession have done it in years gone by. We should take advantage of present-day knowledge, and work upon that line, believing as true scientific men that we shall make a success of it in the end.

Dr. Owens: This discussion is very gratifying to me. In regard to the registering of pulp treatments, of course I said it was an incomplete report and necessarily must be so, unless I could get the co-operation of every other dentist. I have no doubt every one of you have one or more of my patients. If I could know in what condition those teeth were, I could give a more definite report. But I have these which I have been able to follow, and they show less than 2 per cent. I have made a very liberal estimate that 1½ times that amount has come to the rest of you, and I think it is a liberal estimate that out of my practice less than 2 per cent have come back to me where pulps have died, and 1½ have gone to the rest of you. Dr. Harvey said he would like to know what number I have of exposures that I have condemned. Perhaps some day I may give you that. I can give the history of every case I have had, and any particulars so far as I have had to do with it. If I have protected the pulp with a non-conducting substance I know it, and if I have destroyed the pulp I know it, and if the pulp was already dead and I have treated it, I know it. In regard to systemic treatment, I have never been very favorably impressed that that is so important a matter. I am free to say if a congested tooth comes to me I am ready to knock it out. I know what has become of those that have remained with me and have permitted me to care for their teeth. I am a staunch believer in creosote and do not use carbolic acid. As to the matter of the maturity of a tooth, there is a building up and breaking down of a tooth all through life. There is new dentin being formed all through life. A man in his second childhood has very little of the pulp remaining in a tooth. So I claim that that pulp is serving that tooth as long as the man lives. Somewhere in the eighties I had 120 or 130 exposed pulps that I capped, and last year I had only 44. But many had been careless about their teeth, and the first work I would do for them would be about exposed pulps, and I have induced them to take better care of their teeth, so there have been fewer exposures. Also in my early practice I had a poorer class of people to attend to, and in later years my practice is with a class of people who take better care of their teeth.

AN EASY AND EFFECTIVE METHOD OF MAKING A TIN-FOIL DISK FOR PULP CAPPING.

BY E. B. LODGE, D. D. S., CLEVELAND.

By the simple means of a rubber dam punch and a piece of No. 60 tin foil you can punch out a disk that is admirable for capping slight exposures. When a small disk is used it may do well, whatever the condition is, in placing it just where you would like to have it. What I claim for this is the advantage in the manner of taking them up with a carrier. It punches out a small cone, and by taking hold of the cone at the apex you can insert the chloropercha, and it is in the form of a tiny cup and you can place it just where you want it without any shifting of the capping.

A DENTAL ANOMALY.*

BY W. T. McLEAN, D. D. S., M. D., CINCINNATI, O.

A lady about 35 years of age, unmarried, presented herself at my office for consultation and possible treatment. She enlightened me as follows: "Doctor, I have in my mouth a bony lump upon each side of my upper jaw, which has recently annoyed me greatly, and I have come to consult you regarding it, and if you can relieve me I shall be very grateful." To my astonishment I found two deciduous teeth located on each side of her upper jaw, that were quite loose, and the gums congested and somewhat swollen—including sixteen permanent teeth in fairly good condition. The lower jaw containing fourteen permanent teeth. First molars on each side being absent.

This is certainly an unusual occurrence, and I thought it would be appreciated by the members of the Academy to present it. I removed the deciduous teeth, and scaled the permanent ones; prescribed an antiseptic mouth wash, invited her to visit me semi-annually in the future. This is a case of retention of deciduous teeth that I have never seen or read of in dental literature, and therefore consider it an interesting dental anomaly.

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*Read before the Cincinnati Academy of Dentistry.

ORAL HYGIENE.*

BY W. H. VAN DEMAN, D. D. SC., TOLEDO, OHIO.

Oral Hygiene is a subject with which most dentists are more or less familiar. It is a subject, however, which receives very little consideration by the profession, either in its literature, its discussion, or its daily practice. Because of these facts I now ask your attention to the following, not that I have anything new to offer, but that I feel the need of more conscientious practice along this line.

Any thoughtful dentist need note only for a short time the condition of mouths, as they are presented to him, to be thoroughly impressed with the gross neglect, by the profession at large, with regard to cleaning the teeth. This general failure to recognize the practical phase of this subject, is not because of a corresponding want of knowledge or want of ability, but is due largely to the little consideration the subject has received in our literature and discussions. In fact, there are but few short articles found bearing directly upon the subject—only one (written by Dr. J. Taft) that assumes to discuss the question thoroughly. There has been enough written to fill volumes on subjects of so much less importance—all well enough, of course—but why this great lack, this indifference to the prevention of diseased teeth and mouths?

How many dentists will dismiss patients after filling, crowning, bridging, et cetera; never offering to clean the teeth, and put the mouth in a hygienic condition? The one thing which should be done is so often left undone. Conditions remain which will destroy in time the very best of work. For this reason, if for none other, we should leave the mouth as nearly perfectly asceptic as is possible, and should be untiring in our efforts to instruct patients how to keep it so.

People generally do not appreciate the importance of this subject, hence we seldom find a mouth in anything like a state of purity and health; notwithstanding the fact that upon the condition of the mouth and teeth is largely dependent the welfare of the whole body. Perfect digestion and nutrition can only take place after thorough mastication and insalivation, and the latter can be accomplished only when the organs of mastication are in good condition.

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*Read before the Toledo, Ohio, Dental Society.

Intelligent care of the teeth and mouth, then, is of the greatest importance, in fact is necessary, to the best health. Will we not strive more earnestly to teach our patients these facts? The majority know something of how to care for their teeth, few plead total ignorance, but many—yes, most—fail to appreciate this matter. We must arouse ourselves and impart the needed stimulus if this fault is ever corrected, and if we are to be what we should be, preservers of the organs intrusted to our keeping. We cannot shift the responsibility, much as we have tried. The physician should help us, but we must confess that to the laxity of our profession, and to us as individuals, is due this unfortunate state of unclean mouths.

Surely no one should be permitted to engage in the practice of dentistry without thorough knowledge, and the highest appreciation of dental hygiene. The subject should be so constantly held before the student during his college course that he could never depart from it. If such were true, we should have fewer cases of well developed pyorrhea, and should never hear, "I hate to clean teeth, there is no money in it;" and again, "Dr. ——— said it really injured the teeth to remove the tartar; I asked him to do so." Is it not deplorable that a man who "hates" to clean the teeth should be practicing dentistry? Are we simply to repair the ravages of disease and decay, doing little or nothing to prevent them? We should be serving our patients better, more scientifically, if we were to confine ourselves to keeping their mouths in such a state that disease and decay could not thrive therein.

If a patient presents himself with one or more teeth decayed, first be sure the entire mouth is put in as good a condition as is possible, even though it be at the expense of filling those decayed teeth. After all, decay is not the most serious disease we have to combat; better lose a few teeth by caries, than all by pyorrhea or some of its complications. However, there are very few patients who would be unwilling to pay (and that liberally) for the cleaning of their teeth, if the importance of so doing were explained to them. If you meet with one who refuses after such an explanation, clean them anyhow; you will find afterwards you made no mistake.

Thoroughly clean the teeth, and if the gums need treatment attend to that, then go on with the restoration of the parts affected. Before the patient leaves the office ask him to buy a suitable tooth brush, and instruct him to use it with a powder, followed by some antiseptic wash, every night before retiring. After breakfast to use brush and water, and if possible the dental floss (the latter being most necessary where there is any tendency to gum trouble); following lunch the brush and water. Always impressing upon him the importance of using the brush down upon the upper and up upon the lower teeth; brushing only grinding surfaces backward and forward. Notice whether the gums require a soft or hard brush. Experience teaches that those who are the most diligent in the care of their teeth are inclined to use too severe a brush, thereby injuring the gums. The teeth can be best cleaned with a moderately soft brush properly applied.

We should see most of our patients at least once in six months to thoroughly clean and examine the teeth. However, there are many cases, where there is a predisposition to calculus, which require more frequent treatment.

What is more attractive, or adds more to one's appearance, than a clean set of teeth? Is it not well worth every effort we can put forth to induce patients to keep them so, and more—is it not our duty?

I shall be glad indeed, if these words have stimulated any one to give more time and attention to this subject, and to go forward determined to do his whole duty toward those who intrust to him the care of these important organs.

TRANSLATIONS FROM FOREIGN EXCHANGES.

CONDUCTED BY H. PRINZ, D. D. S.

[Translated expressly for Ohio Dental Journal.]

THE EXTRACTION OF TEETH IN ACUTE INFLAMED AND PHLEGMONIC PERIDENTITIS.—DR. LANDGRAF: About the extraction of teeth in cases of acute peridentitis the various writers on the subject have not always entertained the same opinion. Langraff rightly calls attention to the analogy of such cases to similar ones in general surgery. No surgeon would hesitate to make a deep incision into a phlegmonic inflammation. For the same reason, the affected tooth, as the source of infection, should be extracted at once. By such means it is possible to spare the patient a long period of suffering or, as in certain cases, even painful death. Should accidental results happen, they are never due to the operation, but rather in spite of it. L. M. F. Z.

AN ADDITION TO THE KNOWLEDGE OF LYSOL POISONING.—DR. KLUGE: In spite of the extensive use of Lysol, there are only 13 cases of poisoning recorded in the literature. Two years ago, Stueklen reported 7 cases, and now Kluge adds 6 new ones. Of these 13 cases, 4 resulted from external application, and 9 from internal use of the remedy. The author reports a case in which a robust woman of 35 years, suffering from typhoid fever, swallowed 10 grammes of the liquid. Extended burning of a brownish-gray color resulted, which was very painful. Gastrentervitis, coma, and heart-failure resulted. In general, the picture resembles carbolic acid poisoning; the main difference being in the color of the cauterized places. Kluge gives the poisonous dose of Lysol to be about 80 grammes, but even smaller doses are liable to cause serious results. As therapeutical means, the author suggests the use of the stomach-tube, camphor-ether injections in large doses, etc. L. M. F. Z.

THE SHORTENING OF THE PERIOD OF PAIN IN DEVITALIZATION OF THE DENTAL PULP WITH ARSENIOUS ACID.—DR. RJABKOFF: According to the author, the main cause of pain during the application of arsenious acid is due to the pressure upon an ulcerating surface of the pulp. He supports his opinion by the fact that healthy exposed pulps or amputated pulp stumps are always treated painless with arsenic. The ulcerating surface is missing, and therefore no hindrance is in the way to limit the action of the arsenic. The author recommends the wounding of the pulp or the removal of the ulcerating surface previous to the definite application of the caustic. He prefers pure arsenious acid mixed with glycerin and carmin-solution. Other drug admixtures, such as morphia, cocain, etc., should not be used; they cause anemia and lessen the ability of absorbing by the pulp, as well as the active quantity of the arsenic itself in the paste.

L. M. F. Z.

NIRVANIN.—DR. MOUREAU.—Nirvanin is an antiseptic and an anesthetic at the same time. The main advantage of the new anesthetic is its non-toxicity. It is used with good success as an obtundant for sensitive dentin as well as an anesthetic for the mucous membrane. The author employs it in the following solutions:

1. Injections for extracting: 5 gr. solution.
2. For painting the mucous linings: 5-10 gr. solution.
3. For a mouth-wash in diseased conditions of the mouth: 2 gr. solution; of this solution, 20-30 drops in a glass of water.
4. In hypermitive dentin: 10 gr. solution; and also as an adjunct to arsenical paste.

Arsenious acid.
Nervanin a a gr. 15.
Glycerin, q. s. to make paste.

The author prepares his solutions fresh every time he uses them, as they will decompose if kept for some time. If the solutions are warmed, the effect will be increased. After the injection he waits 3-5 minutes to attain the best results. With the exception of one case of oedema after an injection, he never saw any toxic results, and recommends Nirvanin very highly.

W. Z. M.

HYGIENIC MEASURES FOR THE DAILY CARE OF THE MOUTH.—DR. STERN: For years, the author has investigated the question of mouth specialties, and comes to the following conclusions in regard to an hygienic mouth-cleansing agent:

1. It should not be dangerous:
   - I. For the general organism, viz:
     - a. By resorption through the mucous linings of the mouth.
     - b. By accidental swallowing during the process of cleansing.
   - II. For the mouth proper and the teeth, viz:
     - a. Mechanical;
     - b. Chemical;
     - c. Physiological.
2. It should be a cleansing agent in three aspects:
   - I. Mechanical (by friction);
   - II. General chemical (saponification);
   - III. Chemico-physiological (liquefaction of the slime of the mouth).
3. As a pharmaceutical preparation, it should possess therapeutical properties:
   - I. To neutralize acid;
   - II. To act as a tonic;
   - III. To be antiseptic.
4. It should be pleasant in regard:
   - I. To taste;
   - II. To odor;
   - III. To general looks.
5. As a commercial article, it should:
   - I. Be procurable everywhere;
   - II. Keep any length of time;
   - III. Be simple in its manufacture;
   - IV. Be prepared from the purest and best materials.

The author has found that a soluble tooth powder, compounded according to the following formula, has given universal satisfaction, and is in direct harmony with the points mentioned above:

Sod. bicarbonate, purest	oz. 3.
Sod. biborate,	dr. 1, gr. 20.
Ol Peppermint,	gtt. 15.
Menthol,	gr. 3.

Severe Hemorrhage after Extraction.—Dr. Munk: The author has used with greatest satisfaction in cases of severe hemorrhage, Stypticin, a new remedy manufactured by E. Merck & Co. It is employed in the usual way, viz: the alveolus is cleansed, a quantity of the powder introduced on a pledget of cotton, and the alveolus is packed tightly with more cotton.—*Odont. Blatter.*

To Remove Broken Roots.—Dr. Wolf, of Vienna, has had very good success in removing broken-off pieces of roots where the forceps or elevator would deny their services, by using Donaldson cleanser. A rather thick broach is selected and very carefully screwed into the pulp-canal of the root-piece. By slightly moving the hand in the proper direction, the piece will be often surprisingly quickly extracted.

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

A METHOD IN DENTAL PROSTHESIS.*

BY S. J. HAYMAN, L. D. S. ENG.

The extraction of a tooth leaves a wound to heal, with loss of structure. Healing must take place, can we prevent the shrinking?

In using this method, a very little care will dispense with the necessity of a temporary plate, or alteration of the permanent one, when the gums are healed. If treated in the manner now suggested, the gum will not shrink, but will form beautiful festoons round the facings, and a close fit between gums and facings is certain.

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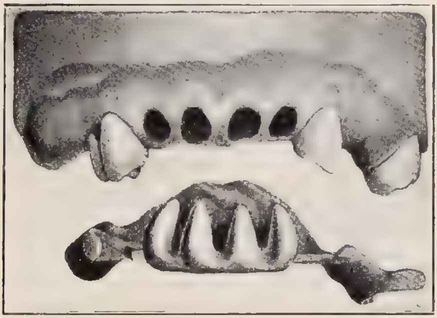
*From Journal British Dental Association.

We require a perfect model of the surface to be fitted by the denture, which shall include models of the sockets of the extracted teeth, and then an appliance which shall keep the sockets open at convenience, hours, days, or weeks if need be, while the denture is being made.



First, an impression is taken in plaster; then the teeth are extracted, the roots filed smooth and a little wax smeared over them so that they may deliver easily, they are put into the impression, which is then poured, and when the cast is obtained the natural teeth are extracted from it, and an accurate copy of the mouth results.

A plate is made in vulcanite which carries points filling the sockets. The patient wears this to keep the sockets open, it does not irritate or hurt. The points may be shortened and made slightly smaller so as to give no pressure. Keeping the sockets open with cotton is very painful, vulcanite is much the best.

For the permanent denture, facings having long necks should be fitted as high as possible up the sockets, say three-eights of an inch; if only one-eighth of an inch is embedded the gum will shrink.

The finished denture should be worn night and day at first; the gum will settle round the facings. Dentures made in this way do not cause tenderness in wearing, the facings simply hang in the sockets.

Of course dentures are often made before the extractions are done, the plaster teeth on the model being cut off, and sockets bored, but the plan proposed is more accurate and clean; next day there is no bleeding.

It is better to take two impressions of the mouth, one for immediate use with the vulcanite, the other for the denture. Pour separately, as the natural teeth are required in each.

The ease and certainty with which a case can be made, having the sockets kept open—and healthy too—is worth the trouble. Patients invariably appreciate the plan and do their part willingly, perhaps because the resulting appearance is so much better and no pain is caused.

UNDERCUT MODELS.*

BY DR. L. P. HASKELL, HINSDALE, ILL.

Prepare the model as for any case, always flaring the sides so that it will drop readily from the mould and shellac. Oil as far as the undercut extends, set upon a glass slab or other smooth surface; mix plaster and coarse, short fiber asbestos, equal parts, not too thin, and spread upon the undercut surface about one-quarter inch thick at the base, and half as thick at the top of the model; when hard, trim smooth, and trim the ends at a bevel so it can be easily replaced in the mould, dry thoroughly and mould; it and the model drop out readily; replace the core in the mould and cast and die. The process is simple and effective.

Oiled sand is of great advantage to the dentist who desires to expedite his work, as it is always ready for use, but cannot be used with zinc, as it is poured so hot it burns the oil, but there is no necessity for using zinc, as a proper babbitt metal is far preferable, being the only alloy that has all the requisite qualities for dental dies, and produces the most satisfactory results, as demonstrated by nearly fifty years' use.

*From article in Items of Interest.

USEFUL HINTS FOR THE LABORATORY.*

BY ARTHUR E. H. LISTER, LINCOLN, ENG.

It is not generally known how to obtain a good die from a lower model that has six or eight anterior teeth standing, and the jaw very much undercut below the necks of the teeth, lingually.

After the model has been prepared in the usual manner, oil or vaseline the parts adjoining the undercut, then flow plaster inside and build up the teeth as high as the plate is intended to go. While still plastic, stick in two pins at a suitable distance apart and press them down until they touch the model. When fully set, you can withdraw pins, and by gently tapping the model, the plaster will leave it clean.

Thoroughly dry plaster, then replace and stick it with a little wax to model; take an impression in sand in the usual way. Remove plaster from model, see that it is perfectly dry, carefully replace in sand impression, and either stick the pins through the holes "already made" into the sand, or hold it lightly in place with a knitting-needle, or anything suitable, until you pour in the metal.

After a little experience with the above process you will be surprised to find that in nine cases out of ten you can procure a die on which to finish striking-up a plate, which you could not have hoped to secure in any other conceivable way, to say nothing of the time saved.

HOW I CROWNED A DECAYED ROOT.†

BY D. W. BARKER, M. D. S.

The first upper bicuspid had had a Logan crown, which, after being worn for several years, because loose; the pin-hole was found to be much too large for the Logan pin and tapering to the edge of the root, formed a funnel-shaped hole, and in addition, decay had caused a large cavity on the posterior side extending from the pin-hole to the exterior of the root and quite deep into the root.

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*Extract from article in Items.

†From an article in Dec. Items of Interest.

First a pin-wire of German silver of medium size was selected and cut somewhat longer than required; thin platinoid was then wrapped around the wire tight and the edges soldered, forming a tube, which fitted the pin-wire snugly; the outside of the tube was then roughened with a sharp blade, then the tube with the wire inside it was set in the root and amalgam packed solidly around it and also filling the cavity of decay; the tube and wire remained in the root until the amalgam had set, the pin was then removed and the amalgam and tube dressed down flush with the root, and I thus had a solid pin hole into which the pin fitted with absolute precision.

A piece of thin platinum was cut to roughly fit the root, a hole cut for the pin, the pin passed through it, adjusted to place, withdrawn and soldered together, again replaced and the platinum burnished to the face of the root and trimmed; to this a plate cuspid tooth was fitted and soldered, thus making what is known as a Darby crown, and set with cement in the usual way.

EVILS OF PREMATURE EXTRACTION OF TEMPORARY TEETH.*

BY DR. L. O. GREEN, CHICAGO.

It is intended by nature that the permanent teeth should follow the gradually absorbing roots of the temporary teeth emerging at the margin of the gums as the temporary tooth drops off for want of other support. The temporary root serves as a guide to the incoming permanent tooth, it following in its wake along the line of the least resistance. When the temporary tooth is prematurely extracted three things may take place. There is, first, an absorption of some part of the alveolar bone forms its socket; second, a probable contraction of the jaw at that point, and third, the loss of the guide for the permanent tooth. The socket in the bone occupied by the temporary tooth is filled in with bony or tough cartilaginous tissue and the gums form a tough fibrous union over that part The permanent tooth is now pretty well wedged in below, in the body of the jaw, and

*Extract from an article on Orthodontia, in Dec. Items of Interest.

left to burrow its way out as best it can, often preferring to penetrate the thin plate of bone on the bucco-labial side, finding this the point of least resistance, and emerging outside the ridge, forming an ugly irregularity. But there is still a more important point to consider in the premature extraction of the temporary teeth, and in this instance we allude more especially to the temporary molars. If these are extracted before the first molar has been erupted, it being so much farther advanced in its development and its journey to the surface than the bicuspids, and there being nothing to prevent its migrating anteriorly, it will in nearly every instance occupy the space almost directly over the second bicuspid, which when it comes down, if it ever manages to get out at all, will be forced out buccally or lingually, not having room to get into the proper line.

DO OXYPHOSPHATE FILLINGS IN DEEP CAVITIES ENDANGER THE PULP?

In the February Items replies are presented from more prominent dentists, and from them we extract the salient points, as follows:

PROF. G. S. JUNKERMAN: If a perfect stratum of dentine exists between the pulp, and all probability of actual exposure is removed, and if the cement is properly mixed, I do not believe that such a pulp will be injured. Take three typical cases in which a perfect stratum of dentine exists. Introduce in the first case the cement properly mixed, free from all superfluous acid. In the second case varnish with shellac the intervening stratum, as a precautionary measure, and introduce perfectly mixed cement. In the third case introduce cement that is not properly mixed, upon either a varnished or unvarnished surface, there being a surplus of acid present; the first two cases will be successful, the last will prove fatal as to the vitality of the pulp.

It is a surprising fact how few practitioners mix cement properly. Many pulps are destroyed by the use of this filling material when its use should have preserved them. All cements have their peculiarities, and before any one of them is used, a perfect comprehension should be had of all its peculiarities. I have no doubt but that we would receive less criticism in the use of cement in the deep-seated cases of caries, if every operator had a full knowledge of how to use cement and how to mix it.

PROF. L. G. NOEL: I certainly do believe that an oxyphosphate filling in a deep cavity carries danger to the pulp, unless that organ is protected from its irritating qualities by a coating of varnish applied to the surface of the cavity before introducing the cement.

I must say that dentists very often fail to make out a clear diagnosis of the condition of the pulps of teeth before filling them, and hence often make the mistake of hurrying a cement filling into a deep and sensitive cavity when the pulp is in a state of hyperaemia, if not of inflammation, and that without varnishing the cavity, or making any effort to protect the pulp from irritation. It has been proved that oxyphosphate cement is to a limited extent a conductor of heat and electricity; therefore, the dentist who will take the risk of filling the cavities without first coating the surface of the dentine with a varnish, is reckless in the extreme; and this remark applies with especial force to the teeth of young patients where the pulps are large and the dentine but partially calcified.

Yes, I think dentists very often lose pulps under cement that would die under any sort of filling.

PROF. C. L. HUNGERFORD: I do not believe oxyphosphate fillings dangerous to pulp vitality. The mass is chemically inert to tooth structure. Deep-seated caries is always a menace to the vitality of the pulp, even though the hole were filled with the "Balm of Gilead."

PROF. C. N. PEIRCE: Oxyphosphate is somewhat of an escharotic. When placed in a deep cavity it sometimes induces irritation of the pulp from its near contact. In consequence of this, the pulp may calcify (secondary dentine), or it may die. If the cavity does not approach the pulp, but the dentine is very sensitive, the action of this cement will invariably remove the sensibility so that a subsequent operation in the near future could be performed without pain.

I do not believe the zinc oxide, one of the ingredients of the oxyphosphate filling, carries any arsenic from the zinc metal. Pulps die under gold fillings; also under amalgam when in near relation; but this is usually from thermal changes. I have not found more than three or four dead or dying pulps under phosphate fillings; certainly a much less number than under gold or amalgam. Hence, you see, my conclusion is that, under similar circumstances, the phosphate of zinc filling is not more dangerous to living pulps than fillings of other materials.

PROF. A. H. FULLER: I believe an oxyphosphate filling in a deep cavity carries less danger to the pulp than most other fillings would under like condition.

I attribute the death of the pulps under oxyphosphate fillings to the condition of the pulps when the teeth were filled, they being either diseased at the time, or so nearly exposed as to be affected by anything in the shape of a filling.

PROF. OTTO ARNOLD: Assuming that the dental pulp is neither exposed nor infected, I believe its vitality may be endangered by the direct application of oxyphosphate in deep cavities from the following causes, viz., chemical action while in the plastic state; heat generated during crystallization; thermal conductivity. Any of these may prove sufficiently irritating to distrub its normal functions and ultimately cause its death.

PROF. HENRY W. MORGAN: I have often met with cases of facial neuralgia and abscesses upon the roots of teeth that had oxyphosphate fillings in them, and because I have had no other reasons to assign the conditions to, I have attributed the death of the pulp to the presence of a large mass of oxyphosphate zinc. I have believed it to be due to the presence of phosphoric acid.

The mixture of oxyphosphate is a chemical process that is not well understood, and in the hands of most men very carelessly handled. In many attempts to fill teeth with it there is an excess of phosphoric acid, which, I think, explains the devitalized condition of the pulp.

PROF. L. L. DUNBAR: I am of the opinion that death of the pulp is to be accounted for by the careless use of large masses of oxyphosphate in cavities where some adverse impression has already been received by the pulp.

I do not believe in the persistent action of oxyphosphate upon the organic elements of a tooth, but think that the deleterious effect is one that would occur under any filling material used in the same way, the trouble being that we expect too much from oxyphosphate.

DR. E. K. WEDELSTAEDT: I believe an oxyphosphate filling in a deep cavity does very often carry danger to the pulp. Why? For the simple reason that in a great majority of cases, the filling is placed on a whole mass of decalcified dentine. Just so long as our text books do not condemn the leaving of soft decay in cavities, and just so long as some teachers will teach doctrines of this kind, just so long will any filling placed on this mass be the means of ultimately destroying the pulp (provided the patient does not die or have the tooth extracted). In almost every section of this country I have heard men say, "You place cement on a mass of decay in a cavity and you destroy all the micro-organisms that are in that decay." That is just where the trouble is, the destruction of the micro-organisms. We know positively that micro-organisms are little cells of albumen, and that they have the reaction of albumen when chemically tested. They have been analyzed, and this is a fact. If we accept this teaching, then it is necessary for us to go a step farther. When cement or any filling is placed on a mass of decay in a cavity, the micro-organisms are shut off from the air and their entire environment changed. They get old, die, and their solubility readily takes place. After resolution, the cell contents is simply a toxine, and is called toxalbumen. This is the same as any other toxine—capable of destroying life. Now, therefore, when a filling is placed over a whole mass of decay, as has been stated, there is danger of poisoning the pulp from the poison that is liberated by the micro-organisms. But how? may be asked. The micro-organisms have penetrated just about so far into the tooth. When the toxalbumen is liberated the fibrils, which are in the immediate vicinity, are first affected by this poison. They absorb it and carry it on to the main body of the pulp, which in turn is poisoned the same as were the fibrils. I do not believe that the cement, in some cases, has any more to do with the destruction of the pulp than has any other filling material that might be placed in that cavity, unless there were free phosphoric acid in the cement, in which case it might possibly destroy the micro-organisms in the immediate vicinity more quickly than if a metal filling had been used.

Phosphoric acid is a caustic, and when it is mixed with the oxide of zinc, it still retains a portion of its causticity. I did not believe that until a minute ago. I picked up a residue cement filling that I had mixed about two months ago, cracked it in the dynamometer and broke the pieces between my teeth. I have those pieces in my mouth while I am dictating, and each time I break a piece there is a fresh taste ofthe acid. If I can notice this taste of the acid with such distinctness, certainly the delicate fibrils in a tooth must be affected by it.

I hold that cements should not be mixed so that there will be free phosphoric acid when the cement has set. There should be just enough powder mixed with the fluid to form a homogeneous mass. When cements are improperly mixed, and there is too much free acid, this acts as a caustic and destroys the pulp. The moisture begins to penetrate the cement soon after the filling is made. The intensity of the acid is slowly decreased until it is so weak as not to be a menace to the micro-organisms. When this condition is reached the micro-organisms enter the cement. It may possibly be that they have previously entered and been destroyed, and that toxalbumen can be found in the cement filling. The bacteriologists must investigate this so that we may have definite information.

CROWN AND BRIDGE-WORK.*

H. J. GOSLEE, CHICAGO.

GUM REPRODUCTION.

Absolutely no objection can be made to sacrificing the root, as described, in the great majority of cases, but in those instances which we sometimes find, where the gum and perhaps the alveolus have receded or absorbed beyond the normal line, the root should only be cut away to a point corresponding with the gingivae of the adjacent teeth, which will cause the artificial substitute, so far as the facing is concerned, to be of the same length as the natural crowns approximating it, and then, should it be desirable to extend the crown up to cover the exposed surface of the root, the band should be so extended and then covered with gum enamel.

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*Extracts from article in Dental Review.

This same artistic effect is also applicable to ordinary rubber or plate teeth for partial dentures, where there is considerable absorption. The tooth of proper size and length is selected and a neck of gum enamel baked on, after which it is ground to fit, and subsequently attached to the plate, which renders the tooth the same length as the approximating natural ones—a highly essential feature, restores the lost gum tissue, and is far easier to fit and adapt than an ordinary gum section tooth would be.

BANDS.

The fitting of the band is, of course, very important, but is rendered more or less easy by leaving the root as described until this step has been accomplished, as it serves to conform the band to the proper shape, and guide it into place. In pressing it into position on the root, it should be so trimmed as to meet the gum line evenly at all sides before passing under it and should be as narrow as possible to meet the requirements; but being narrow and in order that it may possess strength, no thinner than twenty-eight gauge pure platinum should be used. If pure gold be used for solder, a lap joint should always be made, which precludes the possibility of its opening under the influence of the expansion in the subsequent baking. Where platinum solder is used, the joints may be butted.

CAP.

The metal used for floor to the band, which forms the cap, should be of thirty gauge platino-iridium, unless an irregular edge to the band makes it difficult to be adapted when pure platinum can be used; the former, however, is to be preferred in order that the cap may possess every available strength sufficient to permanently retain its shape.

POSTS.

The post should be of platino-iridium of a size proportionate with the root, sixteen gauge, B. & S., for centrals, cuspids and molars, and eighteen gauge for laterals, bicuspids and all of the lower teeth; should extend into the canal a distance equal to the length of the crown from cervix to incisal or occlusal edge; should fit at least two walls of the canal closely, and should be placed far enough lingually so that the projecting end through the cap may not interfere with the facing.

FACINGS.

The facings should be carefully selected and ground to a proper adaptation, and in soldering to the cap in the six anterior teth the pins should come in contact with the post at a point as close to the floor as possible, in order that they may offer no interference with the contouring of the lingual surface of the porcelain or to the occlusion.

ANTIDOTAL PROPERTIES OF PERMANGANATE OF POTASSIUM.

The ease with which permanganate of potassium gives up its oxygen when brought into contact with oxidizable substances renders it of extreme value as an antidote in respect of many, if not indeed of most, of the alkaloids. It is admittedly the most efficacious agent we possess in cases of poisoning by opium and its alkaloids, and it has been estimated that a given weight of the salt will neutralize a similar quantity of morphine. This valuable property, however, is not limited to alkaloids of the morphia series. Stokvis recommends it as an antidote in poisoning by phosphorus, which it transforms into orthophosphoric acid. Autail has shown that it neutralizes the toxic properties of oxalic acid, the cyanides, strychnine, colchicine and muscarine. Lacerda long since recognized it in the treatment of serpent bites, while Durante and Giodano found it equally of service in attenuating the symptoms resulting from the bites of insects. Somewhat later Hugouneng demonstrated its antidotal action in respect of caffeine, cocaine and alkaloids of the atropine group, and still more recently Paratore has shown that curare, nicotine and aconitine are also destroyed thereby. Comparative experiments with the permanganate show it to be far more trustworthy than tannin or iodine in the treatment of strychnine poisoning, whether employed hypodermically or for washing out the stomach. It would seem, indeed, that the permanganate is the agent par excellence to which the physician ought to have recourse whenever he is confronted with a case of suspected alkaloidal poisoning. In view of these marked antidotal properties, it is possible that the administration of permanganate might prove of service in the frequent cases of pto-maine poisoning, the lethal agent in these cases being presumably alkaloids—alkaloids, moreover, which are peculiarly susceptible of oxidation.—Medical Press and Circular.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

Bite-blocks to Relieve Tired Mouth Muscles.—Par vulcanized bite-blocks of rubber and props of a variety of materials give much relief to tired muscles during operations, either with or without the rubber dam, and help to prevent saliva form reaching the upper teeth while silk ligatures are being applied.—*G. H. Kittell, Western Journal.*

To Protect Patient from Dust Blown by Chip-blower.—Patients sometimes sneeze during operations from the inhalation of dust blown out by the chip-blower. The hand of the operator habitually placed before the nostrils, palm outward, will obviate this and prevent the access of bad odors to the patient's nose.—*G. H. Kittell, Western Journal.*

Removal of Gold Crowns.—When necessary, gold crowns can be removed without greatly disfiguring them by drilling a small hole through the lingual surface of the band, through which a narrow chisel may be inserted and the crown pried or wedged off. This hole can afterward be mended with foil and solder.—*G. H. Kittell, Western Journal.*

PROTECT LIPS OF PATIENTS.—The dental profession, which has so much to do with the lips of the ladies, probably overlooks their importance in passing its glances beyond them into the mouth. To handle, or rather finger, a lady's lips so as to leave no wrinkle or "trade mark" behind, is a gift of manipulation which I have known old practitioners never to learn.—*Dominion Journal.*

A SUGGESTION ABOUT PACKING VULCANITE.—If a vulcanite piece is to be packed upside down, you can economize time by inverting the impression for the duplicate in one-half of the flask, instead of in the usual way. Then when you wax the piece onto the model it is already flasked in one-half and there is no waiting for the plaster to set before you pour the counterpart.—*E. H. Lister, Items.*

TIME CAN BE GAINED BY SWAGING BACKINGS FOR PORCELAIN FACINGS.—After the facing is ground ready for backing, press it, pins foremost, into some Melotte's moldine, withdraw facing carefully and place into the pin-holes two very short pieces of an ordinary pin. Now place over this a rubber melting ring and make a die with Melotte's metal, place over this the gold for backing, into which holes for the reception of the pins have been punctured, and drive this into a piece of lead for counter-die. Very little burnishing is required after this to make an accurate adaptation of the backing.—*G. H. Kittell, Western Journal.*

METHOD OF DEVITALIZING PULPS IN TEETH WITH NO CARIOUS CAVITIES.—It sometimes becomes necessary to devitalize teeth in which there are no carious cavities. The writer has been able to approach the pulp with a minimum amount of pain by drilling a hole with a sharp new burr at the mesio-cervical portion of the tooth. By drilling in at this point and using the pressure anesthesia method I have been able to cut off sound anterior teeth and remove the pulp in less than five minutes, while the patient experienced only the trifling amount of pain caused by the pressure of driving the solution into the pulp tissue. Drilling causing no pain till pulp is reached.—*G. H. Kittell, Western Journal.*

SAFETY NERVE INSTRUMENTS.—Dr. Wilh. Vajna describes a new form of broach in *Ash's Quarterly*. It is simlar to the Donaldson bristle with hook, except that about four-fifths of an inch from its point the broach is twisted once around to form a small loop about 1.5 m m. in diameter. This loop allows the broach to bend to and fro without danger of breaking off in the root canal. If it break, which it rarely does, it will be at the loop, which is the weakest part and the remnant of broach is easily removed from canal by means of an excavator, pliers, or any instrument that can be introduced into the remaining loop. He claims that when rotated for removal of nerve, the instrument has greater bending strength and also rotating strength.

A METHOD OF INLAYING SEAMLESS GOLD CROWNS WITH THE JENKINS PORCELAIN.—The crown is first fitted. Enough of the labial surface of the natural tooth is next removed to allow for the presence of the inlay, the greatest amount being trimmed toward and at the grinding-surface. The labial surface of the gold crown is next ground thin, perforated, and slit crown-wise across the line of the edge of the grinding-surface, placed in the mouth, and the gold pressed inward against the tooth. The crown is removed, and this depressed section is filled and shaped out with the Jenkins porcelain body and fused. Three or four applications of porcelain body and fusings are required, but they are quickly performed. The porcelain for anchorage and strength should be extended well into the interior of the crown at the grinding-surface.—*Geo. Evans, Cosmos.*

SACCHARIN INJURIOUS.—The increasing use of saccharin in foods renders it necessary that the public should be frequently warned against the use of this unwholesome substitute for sugar. The fact that saccharin is three hundred times as sweet as cane sugar, and that it is chiefly produced from coal-tar, renders it a very convenient substitute for sugar in sweetening fruits, and in various other ways. It has by some been declared harmless because it does not produce immediately fatal symptoms when taken in moderate doses, but Payen calls attention to the fact that when taken in more extremely minute doses (one and one-half grains per day), violent gastric pains are produced. A drug that is capable of producing violent gastric pains in so small a quantity as indicated is certainly dangerous for ordinary use, and evidently is not a fit substitute for food substances.—*Modern Medicine.*

An Easy Method of Making a Good-Fitting Gold Crown or Band.—After the tooth or root is prepared he takes a piece of thni, soft copper-plate, a little wider than the nlength of the crown to be made and considerably longer than the circumference of the tooth. This he doubles onto itself, so as to form a loop of the middle portion and bring the ends together flat. The loop should be a little larger than the root. The ends are soldered together, and the loop placed over the root and crowded well up under the margin of the gum; and while in this position the ends of the loop are pinched tight together with a pair of flat-nosed pliers, so as to draw the band tight around the tooth. The band is then removed carefully from the tooth and held over a small hole in a piece of metal, and poured full of Melotte's fusible metal. Now remove the band and you will have a plug of fusible metal the exact size and shape of the tooth upon which the necessary gold band can be made for banding the tooth with prefects confidence of correct fit. The band should be made as little smaller than the plug, and driven upon it.—*F. A. Green, Cosmos.*

EDITOR'S NOTES.

DENTISTS IN THE ARMY AND NAVY.

Have you written your congressmen to support the bill, now pending in Congress, for appointment of dentists to the army and navy? If you have not done so, you should write immediately. It is a just measure, and one that should become a law. On February 28th, 1900, it was reported, committed to the committee of the whole house on the state of the Union, and ordered printed. Mr. Hay, from the Committee on Military Affairs, in submitting the report, said:

"The Committee on Military Affairs, to whom was referred the bill (H. R. 972) to provide for the appointment of dental surgeons for service in the United States Army, submit the following report with certain amendments, and as so amended recommend that the bill do pass:

In line 5, page 1, strike out the words "and appoint."

In line 7, page 1, after the word surgeon, strike out the words "one dental surgeon to" and insert the words "not to exceed one for."

The necessity for dental surgeons in the army has been made manifest since the beginning of the Spanish war, and in the light of more recent army service in the Philipine Islands, this necessity has been emphasized, and some effective action is believed to be mandatory to accomplish this much-needed end.

The testimony of army officers of the line, of army surgeons, and the cordial approval of this bill by Surgeon General Sternberg would be sufficient alone to induce your committee to favorably report the measure, to say nothing of the demands for its passage in the interest of humanity and the health of our soldiers.

But from almost every State in the Union come to Congress appeals, not from dentists, but from medical men of the highest standing, men of national reputation, expressing their opinion that the measure is one necessary not only for the health of the soldier, but necessary for his efficiency. We would call attention to the fact that Dr. Senn, of Chicago, a surgeon of world-wide reputation, indorses the measure. Dr. Latimer, of Baltimore, of national fame in his profession, heartily approves it.

Nearly all members of Congress advocate its passage.

Governors of some of the States have taken the trouble to address letters, in the most approving terms, on the subject.

We do not deem it necessary to reproduce in this report the letters of army surgeons, both of the regular and volunteer army; of the distinguished medical men in civil life; of eminent civil officers, and of members of the Senate and House of Representatives. Suffice it to say that all cordially indorsed the proposition of adding dental surgeons to the army, and in this they were supported by the New York Herald, Nashville American, Memphis Appeal, as well as many journals throughout the country.

Your committee believing that the enactment of this bill into a law will increase the efficiency of the army and add to the comfort of, and retard disease among its rank and file, unanimously recommend its speedy passage."

AMENDMENT TO PATENT LAWS WHICH IS OF INTEREST TO THE DENTAL PROFESSION.

About a year ago a bill was introduced in Congress specifying appliances on which patents should not be issued. Among other things it stated that:

"No patent shall be granted upon any art of treating human disease, ailment, or disability, or upon any device adapted to be used in the treatment of human disease, ailment, or disability, or attached to the human body and used as a substitute for any lost part thereof, or upon any art of making such device, unless such device is adapted to be put on the market and sold substantially complete and ready for use or attachment.

"Nor shall any suit or action be maintained for the infringement of any patent for an art of treating human disease, ailment, or disability, or for any patent for any device adapted to be used in the treatment of human disability, ailment, or disease, or attached to the human body and used as a substitute for a lost part thereof, or any art of making such device, unless it appears that such device can be made and put on the market substantially complete and ready for use or attachment."

The bill was not acted upon in the last Congress and has again been introduced, by Senator Platt, in the Senate, where it is known as Senate Bill 269, and also by Congressman McClellan, in the House, where it is known as House Bill 7017.

This is an important measure because it reaches to the root of an existing evil that should be eradicated. The dental profession has been hampered by patents, and unjust burdens been imposed by patentees holding patents covering methods and devices for treating human disease, ailments and disabilities. It was unjust imposition that brought about the formation of the Dental Protective Association. This Association has been the means of doing much good in the past and deserves the hearty thanks of the profession, but it cannot be kept up indefinitely. Amend the patent laws so that no injustice can be imposed on the dentists and we shall need no protective association to defend us against these process patents.

In the present condition of affairs with the International Tooth Crown Co., it is more than ever evident that our future protection must come from stamping out the evil at its origin, and that is in the Patent office.

To get rid of an evil it is necessary to root it up. This amendment seems to do that effectually so far as process patents are concerned. Every dentist is personally interested in this matter and if you have not already done so you should write at once to your representative in Congress and urge him to support the measure.

REMARKS ABOUT OUR NEW DRESS.

The last issue of the Indiana Dental Journal contains the following comment:

"The editor and publishers of the Ohio Dental Journal have adopted a new cover. It is a cross between Irish and English—a mixture of the green and the red. Usually, under these circumstances, a scrap results. The new cover is brighter than the old one, and indicates that one more journal has decided that a little freshness and brightness is desirable, even in a dental magazine."

Brother Hunt calls us Irish, and he calls us English, but we don't mind that. Then he says we're green, too, and deep-dyed, and a little fresh, or words to that effect, and that brightness is desirable even in a dental magazine. Then he adds that, "usually, under these circumstances, a scrap results." But we don't propose to scrap, Bro. Hunt, call us all the pet names in your vocabulary, if it will ease your mind; we like your talk, for we know you seldom mean what you say. But we needed a new cover; in fact, we had to have more cover; most anyone does who wears one suit continuously for nine years. Brother Hunt has been in the editorial chair only three years, yet he states that he already "has to keep the fringe off the bottom of his trousers by strenuous effort with a pocket-knife." We imagine it must be quite a task, especially if attempted with his trousers on. But when the bottom of your trousers falls out, my friend, and you have to either disgrace the fraternity of dental editors, or shut yourself up in your sanctum, you will perhaps think of the names you called a brother editor. And besides, you haven't any kind publishers to voluntarily buy a new cover for you.

DELAYED.

On account of a change in printing houses, this issue has been delayed. But as THE JOURNAL is now set on a magazine machine, we hope to hereafter get it out on time. You will notice that the type is new, from cover to cover.

NEW PUBLICATIONS.

DENTAL MICROSCOPY, by A. Hopewell Smith, L. R. C. P., M. R. C. S., L. D. S., Demonstrator of Histology at the Dental Hospital of London, etc. London: The Dental Man'f. Co., 6 to 10 Lexington St. Philadelphia: S. S. White Dental Man'f. Co., Publishers, 1899. Second revised and enlarged edition.

It is with pleasure we call the attention of our readers to this admirable work. A new edition in so short a space of time testifies as to its popularity. This second edition is double the size of the first, and contains *242* pages. Chapters on Bacteriology and Pathology have been added, and many new illustrations introduced, including eight lithographic plates, and a series of plain line drawings, which render the photographs, of which they are copies, more intelligible, especially to the beginner.

The author's aim has been to give the dental student a clear insight into the preparation of the various dental tissues, for the purpose of microscopical examination, and thus form a basis for a complete study of the histology and patho-histology of the organs with which he is so closely associated. This enables the student, through the aid of the illustrations, to recognize the most important features of the dental tissues.

In general, the book treats the following subjects: Preparation of sections of hard tissues; of soft tissues; of hard and soft tissues combined; imbedding and cutting sections; staining and mounting sections; preparation of sections of the patho-histological tissues; bacteriological appliances; bacteriological methods; the preparation of sections of the carious dental tissues, natural and artificial; injection of capillaries; measurement and delineation of objects; photo-micography, etc. The book is written in a concise style, and covers the ground very effectively. The marginal topic arrangement is to be commended, and the excellent engravings highly praised. It is the most valuable work we know bearing on this subject, and everyone interested in this line of work should procure a copy.

SOCIETY.

INTERNATIONAL DENTAL CONGRESS.

REPORT OF TRANSPORTATION COMMITTEE.

The Sub-committee on Transportation has completed arrangements with the well-known tourist firm of Thos. Cook & Sons, 201 Broadway, N. Y., so that dentists who expect to attend the Congress to be held in Paris, commencing August 8th, 1900, may secure for themselves and their families steamship and railroad tickets and hotel accommodations at the minimum of expense and trouble.

In making these arrangements the committee has taken into consideration that while some of the delegates may wish to secure only transportation from New York to Paris and back to New York, many will wish to visit other parts of Europe during the summer, and they have planned the following tours to assist such in the selection of a trip that the time at their disposal and their means will suggest.

TOUR I.

A. From New York by Red Star Line Steamer "Friesland," on July 18th, for Antwerp, thence rail via Brussels for Paris, returning same way to New York. First-class passage providing berth at minimum rate for two-berthed room................$157 85

If traveling second class from Antwerp to Paris and return, fare would be $4.65 less.

By traveling on steamers "Kensington" or "Southwark" of the same line, fare would be reduced.

B. Via Cherburg (North German Lloyd service). From New York by North German Lloyd steamers "Barbarosa" and "Friederich der Grosse," sailing July 12th and 19th, respectively, for Cherburg, thence rail to Paris and return same way (twin screw service only). First class passage, providing berth in room for two persons (minimum rate) . . . $177 00

C. Via Cherburg (Hamburg-American Line Service), From New York by Hamburg-American Line steamers "Pennsylvania" and "Pretoria," sailing July 14th and 21st, respectively, to Cherburg, rail to Paris, and return via Boulogne-sur-mer and Hamburg-American Line steamer (twin screw service) to New York. First class passage providing minimum fare for berth in room for two persons only $184 25

Lower fares can be obtained if occupying berth room with two or three other persons.

D. Via Boulogne-sur-mer (Holland-American Line). From New York by twin screw steamers "Potsdam," "Statendam," and "Rotterdam," sailing July 7th, 14th, and 28th, respectively, to Boulogne-sur-mer, thence rail to Paris, and return same way to New York. First class passage providing minimum fare for berth in room for two persons. $163 00

If traveling second class from Boulogne to Paris and return, fare would be $3.80 less.

Lower fares can be made by leaving on steamer "Sparndam," July 19th.

Tickets can also be arranged via Southampton or Liverpool at proportionate fares.

TOUR 2.

To provide hotel accommodations in Paris for two weeks (14 days and 13 nights) at Grand Hotel du Trocadero, carriage drives for three days, including excursion to St. Cloud and Versailles, 20 tickets of admission to exposition and transfers from railway station to hotel . . . . $ 65 00

TOUR 3.

One week's tour from Paris to Switzerland, visiting Lucerne, Interlaken, Thun, Berne, Lausanne, Lake Leman, Geneva, including hotel accommodations, sight seeing, etc., second class R. R. .... $ 50 00

TOUR 4.

One week's tour from Paris to Mayence, thence steamer on Rhine to Cologne, rail to Amsterdam, The Hague, Rotterdam, Antwerp, Harwich, London, including second class railway travel, first class on steamer, hotel coupons (3 meals per day, with lodging)............. $ 43 50

Those traveling via Cherburg can return by steamers of same line from Southampton and so make short tour from Continent through England in connection.

There is a United States revenue tax of $5.00 upon each ticket, regardless of the number of passengers in whose name it may be made out.

Should any one wish to make a longer tour than any of the foregoing, or one with a different route, Messrs. Thos. Cook & Sons have such a large variety of tours already planned that there need be no difficulty in making a selection to suit the taste, means or time at the disposal of any one.

The war in South Africa has caused the withdrawal of many of the English steamers. Passenger accommodations across the Atlantic will be less than usual this summer, while the Paris exposition is attracting great numbers, so that the committee wish to impress upon delegates the great importance of securing their steamship accommodations at once.

Address all communications regarding steamers, railroads, hotels, etc., to Messrs. Thos Cook & Sons, 251 Broadway, New York.

Transportation Committee

A. W. HARLAN,
W. H. GRISWOLD,
W. E. WALKER,
WILLIAM JARVIE, *Chairman.*

KENTUCKY STATE DENTAL SOCIETY.

I wish to call attention to the change of date of the meeting of the Kentucky State Dental Association. On account of change of meeting of Confederate Association, and for the purpose of getting railroad rates, we too have changed our date to May 29-30-31. We have some thirty papers promised for the meeting, and nearly as many clinics, and we will still add others to the list. Please be kind enough to announce this change of date. We have men on the programme from about twelve States; don't fail to come and meet with us, and we promise you a fine time.

F. I. GARDNER, D. D. S., *Sec'y.*

OUR AFTERMATH.

PERSONAL AND MISCELLANY.

DIED IN A DENTAL CHAIR.—On February 19th, Mrs. John Leinhos went to the office of Dr. E. S. Kiplinger, Lorain, Ohio, to have teeth extracted. A physician, Dr. Hug, was called to administer chloroform. The patient was 21 years of age, apparently in good health, and heart was found, on examination, to be all right.

Ten teeth had been extracted, when the heart began to weaken. The operation was immediately stopped, hypodermic injections made, restoratives applied and artificial respiration resorted to. But in spite of all the patient died.

Dr. Hug was well versed in administering anesthetics, having given all the chloroform in the hospital for two years, aside from its use in his own practice.

Other physicians, at the inquest, testified that Dr. Hug was one of the most careful men they knew in administering chloroform. That he took all possible precautions, and that no blame could be attached to either him or Dr. Kiplinger.

The coroner's verdict was: Accidental death due to paralysis of the heart.

This sad case only confirms the risk of chloroform anesthesia for tooth extraction, even when in the hands of the most competent men.

Doors of the Dental Protective Association Not Closed.—From letters and circulars sent out and published in the journals, the idea has become almost universal that the doors of the Protective Association were closed and no one could join that body hereafter. Regarding this Dr. Crouse, in *Dental Digest*, says: "Nothing could be further from our plans. *The doors were closed only for defense against suits on the present bridge patents*, and this action has no bearing on the Association taking in new members and guaranteeing to protect them against the abuse of other illegal patent companies."

Dental Surgeon Appointed to Army Service in South Africa.—Dr. F. Newland Pedley, of London, Eng., has been appointed dental surgeon for the Imperial Yeomanry Hospital for South Africa. This appointment has been made in view of the fact that a large number of wounds of the face and jaws have been reported to be occurring in which his special knowledge and skill are likely to be of service. This will be a permanent base hospital containing 500 beds for sick and wounded, and a hospital staff of 230 persons.

The Difference Between "Faith Cure" and "Mind Cure."—Charles Dudley Warner says that the difference between the "Faith Cure" and the "Mind Cure" is that the mind cure doesn't require any faith, and the faith cure doesn't require any mind.

Dr. Schenk Pensioned.—Dr. Schenk, professor at the University of Vienna, who published a book in which he asserted that, after twenty years of experiment, he had discovered the secret of exercising an influence over animals and men so as to fix the sex of offspring, has received permission from the Minister of the Interior to retire on a pension, as the result of a demand by the medical faculty for his dismissal for the alleged frivolous publication of scientific matter constituting a form of self-advertisement.

Recovery from Tetanus.—Woods reports the only case of tetanus he has seen recover, the patient treated by hypodermic injections of 10 per cent. solution of carbolic acid until he was able to swallow, except when he was quiet in the night. When he became able to swallow, a dram of the solution in glycerine was administered every three hours until the spasms ceased, and after that a dram three times a day, gradually diminished to one-half dram until all rigidity had disappeared. He appends the report of a case of tetanus in a horse similarly treated, with like results.

A Patriotic Dentist.—A well known Cardiff dentist shows his patriotism by making an offer of his services, free, to any and all soldiers ordered to the front, who will meet him by appointment, and guarantees the same consideration and treatment accorded his paying patients.

California State Board of Dental Examiners Charged with Irregularities.—According to California newspapers, some of the members of the State Examining Board are alleged to have solicited and accepted bribes from candidates for license. The affair has created quite a stir in the state and will probably lead to an amendment to the present law, making the future board amenable to the State Dental Society for its official acts.

DR. A. J. WATTS DEAD.—Dr. Watts, the inventor of the well known Watts Crystal Gold, died at his residence in Brooklyn, N. Y., in January. He was 73 years of age.

INSTITUTE OF PEDAGOGY is the new name adopted by the National School of Dental Technics at its recent Philadelphia meeting. The meeting was a profitable one. A display will be made at the Paris Exposition which will represent the curriculum and teaching facilities of American dental colleges. The exhibit will be a composite and not an individual display.

THE LATE DR. EVANS' MS.—Monsieur Symonds, a Paris bookseller, has been sentenced in default by the Eleventh Chamber of the Correctional Court, on the charge of "abus de confiance" for refusing to restore to the heirs of the late Dr. Evans the manuscript of the latter's book, "The Fall of the Second French Empire." The sentence is eight days' imprisonment, 100 francs fine and 500 francs damages. The late Dr. Thomas Evans, formerly a dentist of much repute practicing in the Rue de la Paix, Paris, made a great name for himself during the Commune. It was he who succeeded in getting the Empress Eugenie safely away in his carriage from the Tuileries, finally conducting her to England. He was mixed up in all the political and court intrigues during the Second Empire, and his book, of which only a limited number was printed, deals chiefly with the events in which he played a prominent part himself.

DR. HASKELL WELL RECEIVED ABROAD.—In a letter received recently from Dr. Haskell he incidentally refers to his recent trip abroad, as follows: "I was gone three months, for the second time, instructed classes in Berlin, Hamburg, Vienna and Paris. I took no letters of introduction. I could ask no better treatment by the profession in all those cities than I received. In each city, and Berlin by two, was invited to address at special meetings called for the purpose, the leading dental societies. The Austrian Dental Society at Vienna gave me a banquet. The last was the American Dental Club of Paris, consisting of twenty members, eighteen being present. A finer set of men I have never met. Yes, I had a royal time all around and shall go again this year, taking in St. Petersburg, Stockholm, Paris and Berlin.

Dr. R. J. Roper is now attending to the dental wants of the people of Phoenix, Arizona. He was recently married to a Miss Burdick, of Orange, Cal.

Dr. W. P. Howell, formerly of Fostoria, Ohio, has concluded to cast his fortunes among the Toledo dentists.

Dr. C. F. Chase, class of '99, Ann Arbor, has chosen Toledo for his professional field.

Dr. H. C. Raymond, of Detroit, took a special trip to Toledo to purchase a Ransom & Randolph cabinet. He has placed his order for a No. 65 mahogany special natural finish, and with some changes which require that the cabinet be built to order. About the middle of April the doctor will be able to show a cabinet to his fellow practitioners that will make them green with envy.

A new article—illuminated rubber dam—has been placed upon the market. The Ransom & Randolph Co. state that it seems to be a good thing.

Dr. L. J. Mitchell, of London, England, lately visited his friends in Ohio, Michigan and other states.

The Ransom & Randolph Co. report that there is a marked increase in the number of dentists who buy sets of teeth, and crowns one at a time. This indicates that dentists are becoming more particular as to the shades and sizes of teeth—so much so that their selections have to be made from a larger stock than they can afford to carry. We are inclined to believe, however, that their increase in orders for single sets may be induced by the fact that they give particular attention to tooth orders and give better satisfaction in consequence, to the dentists.

Dr. N. S. Hoff, of Ann Arbor, Mich., is now on the Paris Congress Committee for the United States.

Dr. C. J. Miller, class of '99, Ann Arbor, has located in Huntington, Indiana.

Dr. C. H. Lucas, Plain City, Ohio, has improved his office equipment by the purchase of a Ransom & Randolph Co. No. 40 cabinet.

Dr. F. C. Orvis has located in Severy, Kansas.

Dr. C. J. Lyons is building up an extensive practice in Adrian, Mich.

Dr. S. C. Sims is enjoying a good practice in Versailles, Ohio.

Dr. S. W. Hussey has given up his practice in Spencerville, Ohio, to join the brave defenders of our flag in the Philippines.

Dr. A. A. Baker has located in Woodville, Ohio.

Dr. S. M. Fowler, so long identified with Muskegon, Mich., has recently moved to Battle Creek, Mich., and has become associated with Dr. A. W. Atherton. Dr. P. G. Bierman, formerly of Manistee, succeeds him.

Dr. D. H. Morgan, formerly of Van Wert, Ohio, has purchased the office of Dr. F. C. Sizelan, of Muskegon, Michigan.

Dr. W. C. Barrett, Buffalo, sojourned in Cuba this winter and has written several descriptive letters for publication in the Illustrated Buffalo Express. They are extremely interesting, as one would expect, coming from the pen of Friend Barrett.

THE

OHIO DENTAL JOURNAL.

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CONTRIBUTIONS.

MAKING OF MODELS AND DIES FOR SWAGING.

BY C. R. BUTLER, D. D. S., M. D., CLEVELAND, OHIO.

Seeing an item in the February number of the OHIO DENTAL JOURNAL mentioning a novel method of making a zinc die, it occurred to me that some additions to the suggestions might be helpful.

Having had some experience in a brass foundry before becoming a student in dentistry, I had no difficulty in getting a good zinc die in moulding sand from ordinary models; and with the Hawes section flask and parting sand models with deep undercut can be fairly well moulded.

But in irregular forms I have found the plan in part suggested in the article by Dr. O. P. Wolf (in "Items of Interest") to give me a more perfect die. I slightly oil the plaster model so the sand and plaster, when set, will readily separate from the model. I cut the sand and plaster so that the palatal portion will fracture along the ridge. Having cut the surrounding portion into two or three sections, all can be readily separated and put together with fine binding wire, for drying out. If handled with care, two zinc dies may be made in the same mould.

I have used this process in partial pieces where a close-fitting gold plate is desired. I like to have a double die, and not *overswage.*

A QUICK AND EASY METHOD OF BACKING BRIDGE TEETH.

BY S. M. WEAVER, D. D. S., CLEVELAND, OHIO.

We will take for example a bridge comprising six anterior teeth. First, take the platinum or pure gold backing, as the case demands, and punch holes for the pins and put in place on the porcelain, allowing it to extend over the edges of tooth. Now take two pieces of car-spring rubber, about two inches square and about three-quarters of an inch thick; make a little slit in one piece, deep enough to admit the pins of the porcelain; this also keeps the tooth in place on the block; then put the other piece of rubber over this and strike it hard several times with your swaging-hammer on the swaging-block. In my practice I use a 4-lb. hammer, and the swaging-block has a steel top; and you need not be afraid of breaking the porcelain, for there is absolutely no danger. This method will adapt the backing to the facing absolutely perfect. Then take a file and dress off the surplus of backing, being careful not to take it off too close; then carefully remove the backing from the facing, taking pains not to bend it, and then cover entirely the side next to the porcelain with Mason's Investment Material, or some other preparation, to prevent the solder from flowing. Then place on a charcoal-block (covered side down), and put on your pieces of scrap gold or 20k. solder, as the case may demand. After you have sufficient material melted on the backing, throw it into some water, and the investment paste will leave the backing nice and clean. You have thus far saved the time of investing, heating-up, cooling-off, and all the danger of cracking the porcelain, which, in the method as described above, has not been in the fire at all.

Then take the backing in a pair of pliers (Ash & Son's pin pliers preferably), allowing the beaks to grip over the cervical end of the backing, being careful not to mar the feather-edge on any other part. This will enable you to hold the backing firmly against your work-block for the boring of the holes to admit the pins.

The marks already being through the platinum show exactly where to insert the drill. The holes are drilled entirely through platinum and backing. Next take a bracket-saw and split the pins nearly to the porcelain. Before putting the backing on take a bur and counter-sink the ends of the holes and connect the two holes with a shallow groove, so the solder will flow across more easily. Next take the porcelain and backing and press firmly together; then, by filing toward the porcelain, dress the dummy down as ordinarily, the pins being spread with a knife hold the backing firmly in place, and before investing flow some sticky wax to hold together and keep investment material from getting in after investing in the bridge; after boiling out the wax, place a small piece of solder over or between the pins and the required amount between the dummies in the usual way, soldering the bridge in one soldering. In this more than double the usual amount of time is saved, and there is no danger of cracking the porcelain, for there is room for the slight movement of expansion.

The dummies should always be polished perfectly before putting them into the last investment.

INTERESTING CASE FROM PRACTICE—A NON-MALIGNANT GROWTH.

BY A. O. WRIGHT, D. D. S., ST. IGNACE, MICH.

Mr. ————, suffering from an abscessed lower right second molar, went to a physician one day in June and had it lanced.

The case had no more attention until presented to me on October 13th, when I found a growth about the size of an ordinary hickory-nut attached to the outside of the lower maxilla, directly above groove for facial nerve and artery.

The tooth being badly decayed, I extracted it, and found a fistulous opening through the outer plate of the jaw and down to the main branch of the inferior dental-nerve.

After enlarging the opening through the outer plate, with an Allport's burr, I washed it out with warm three-per-cent. carbolized water, hydrogen peroxide, and warm water with Listerine, in the order named. The moisture was then absorbed with cotton, and tincture of iodine, and iodine and aconite pumped in, and the cavity packed with iodoform gauze. On alternate days one-half per cent. of lysol was used, instead of carbolized water.

When washing through the outer plate, the pressure could be felt in front of ear.

The daily treatments were changed to every second day after two weeks, and as soon as pus ceased it was left for nature to complete the absorption.

I judge that this bony enlargement was occasioned by the proliferation of bone-cells in nature's effort to circumscribe the infected area.

I met a similar case of the superior maxilla about two weeks ago.

EVOLUTION OF THE TEETH.

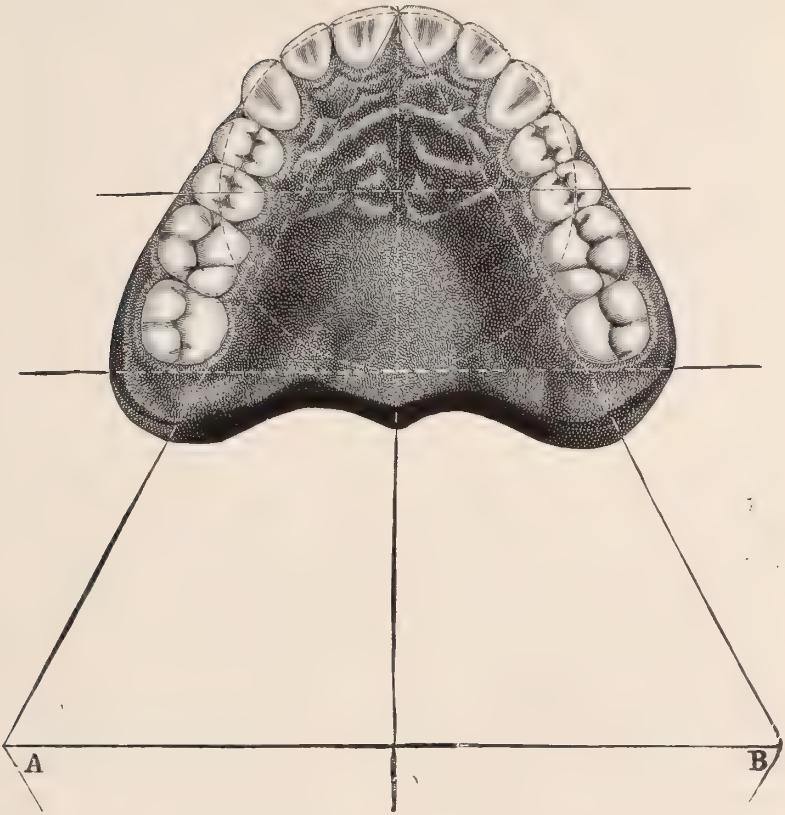
BY L. P. HASKELL, CHICAGO, ILL.

Much has been written in regard to the evolution of man from the baboon, but whatever satisfaction the advocates of this theory may obtain from their conclusions that they are direct descendants of the monkey, they are welcome to. I prefer to take the statement of Holy Writ that God "made man in His own image," and not in the image of a monkey.

Whatever proof they think they are possessed of in this matter, there is one phase of the subject that demonstrates beyond a peradventure that the *teeth* are not the result of evolution, but the plan of an all-wise Creator.

The late Dr. Bonwill, some thirty years ago, began investigations of the human teeth, and after the examination of thousands of skulls of all races on the earth, and of prehistoric races, discovered some wonderful facts, which ne gave to the world in detail, in elaborate diagrams, with explanations. Although these have been published in full, and portions in dental journals, I have been surprised to find so few dentists familiar with them. I will call attention to only one phase of the subject.

He discovered, in short, that a geometrical law governed the shape and arrangement of the teeth. He found that there was a relative proportion, in width, of the different *classes* of teeth, in the upper jaw, centrals, laterals, cuspids, bi-cuspids and molars,



no two of which are of the same width. He could tell, from an examination of any tooth in the upper jaw, what was the relative width of each of the other classes.

He also discovered that the six anterior teeth formed the arc of a circle, the radius of which was the combined width of the central, lateral and cuspid teeth. The diagram here presented, taken from White's Catalogue of the Teeth, in an article entitled "Typical Tooth Forms" illustrates the subject. It will be seen that a line drawn through the center of the circle passes through the middle of the second bi-cuspid, and a line across the posterior margin passes across the posterior margin of the second molar. The third molar evidently is extraneous.

I have tested this in many models of the natural teeth, and it was always verified, large teeth or small ones, demonstrating the truth of Dr. Bonwill's discovery.

This diagram is an excellent guide to the inexperienced dentist in arranging teeth. Having selected his set of teeth, measure with the compasses the width of the three teeth indicated, and use the circle of which it is the radius. It will be seen that it rests on the margin of the incisors; the cuspids *outside,* as they are the most prominent teeth in the jaw; the *first* bi-cuspids are inside the cuspid, the second about one-third outside the circle, and the circle crossing the anterior lingual corner of the first molar. Of course, allowance must be made in the case of the molar, from the fact that very few artificial teeth are as broad as the natural.

CONSTRUCTION OF A DENTURE FOR A CORNET PLAYER.

The following communication was sent to several prominent prosthetic dentists, whose replies are appended:

I am going to take the liberty to ask you a few questions about a plate I am going to make or want to make.

The patient is a very fine performer on the cornet, in fact he earns his daily bread in one of our principal orchestras as a musician. His plate (a full upper) to all appearances is a beautiful piece of work and is all a plate could be as far as masticating is concerned, but the trouble I want to overcome is when the mouthpiece of the cornet presses against the centrals down goes the plate; and he is very much afraid of having to "quit playing and carry a hod."

The pressure of the mouthpiece is at times, or for the high notes, very great, and can be reckoned by pounds.

F. N. Rose.

San Francisco, Cal.

REPLIES.

Prof. L. P. Haskell, Post Graduate School of Prosthetic Dentistry, Chicago.

The only remedy which I know of is a snugly-fitting plate. Of course the condition of the jaw is an important factor. A ridgeless jaw, or nearly so, and flexible, is a bad condition. But with fair, solid ridge, plaster impression, plate worn high as possible, and over the cuspids higher than elsewhere; plate relieved over the hard center, so there will be no bearing. No air-chamber needed, no occlusion of the anterior teeth, and teeth not too short, as thousands of sets are. I can see no reason why the fellow can't blow as hard as he pleases. In very flat, ridgeless jaws, a metal plate, swaged on babbitt metal die, will succeed better than a rubber denture.

Prof. G. H. Wilson, Dental Department Western Reserve University, Cleveland.

I must say, to give a method of procedure without seeing the case, is like looking for a needle in a haystack.

We know a full upper denture is retained (barring springs) by atmospheric pressure. In addition to this we may so shape the periphery of the buccal and labial flange as to favor the muscles of the lip and cheeks folding over the ledge, and thus add muscular force to atmopheric pressure.

The first essential is as nearly perfect an impression as possible. Probably more impressions of the mouth are seriously defective than otherwise. The portion most likely to be defective is the labial and buccal wall of the alveolar ridge. A small roll of wax placed upon the inside of the periphery of the flange of the tray will favor holding the plaster firmly against this wall. If the cup is held firmly in position by pressing against the vault with the first or second finger of the left hand, and with the thumb and index finger of the right hand making gentle pressure upon the lip and cheeks, it is not difficult to get a satisfactory impression.

The ledge upon the rim of the denture is formed by making the periphery as thick as the individual case will permit, then make as much of a concavity as possible, extending to the cervical portion of the teeth and from heel to heel.

Prof. C. J. Essig, Dental Department University of Pennsylvania, Philadelphia.

The problem as to whether this individual can continue his career as a professional cornetist after the loss of his teeth depends upon the form of his mouth. If it is in every sense a favorable one, that is to say, if it is large with a deep arch, a well defined alveolar ridge, and thin tissues, in short an ideal mouth, he might have a denture made that would withstand the pressure of the musical instrument; but if his mouth is small and flat, with thick and yielding tissues, he will probably have to "quit playing and carry a hod." For in such a case no artificial denture could be devised that would do more than restore to a certain extent the functions of mastication and speech. It would be too much to expect in such an unfavorable case to equip the man for cornet playing. The prosthetic dentist is generally gratified if he can restore the natural functions; but the requirements of art, such as cornet playing, would in the majority of artificial dentures be more than could be reasonably expected from ordinary artificial dentures.

AN AMUSING INCIDENT.

BY W. H. ROWAND, D. D. S., BELLEFONTAINE, OHIO.

The following is the reproduction of a story told me a few days ago by a man of good reputation, and who is willing and able to prove his statements:

During last harvest, while stacking hay, he lost his lower plate. It could not be found, so he had a new set made. Later he had this hay baled and hauled to the barn. A few weeks ago, while cleaning the mangers for the seed, he found his teeth. So far the story is not so strange, except that one would wonder how it could be possible for a set of teeth to go through a baling machine without being broken. But the story does not stop here. A lady came to visit this man's home, and she had had the misfortune to lose her lower set. As the gentleman had two sets now, he kindly offered her one of his, and, to the surprise of all, they fitted very nicely, and she is still wearing them, with comfort.

TREATING TEETH—SOME CASES IN PRACTICE.*

BY OTTO MARX, D. D. S., TOLEDO, OHIO.

In presenting this paper it is not my intention to give any new or original method of treating teeth, but merely to go over the old ground, and give you my way (which possibly does not differ from yours), cite some cases in practice, ask for information, and, above all, bring out different views and a liberal discussion.

First, let us divide the teeth to be treated into two classes: Those with the nerves already devitalized, and those which, for some reason or other, will have to be devitalized.

The first class contains the cases by far the most troublesome and unreliable. When such a tooth presents itself, the first thing to do is to obtain free access to the pulp cavity, open it up *thoroughly*.

The work ahead of us is difficult enough, especially if it be a lower molar, without being hampered by a small opening in the tooth. After having cleared away all the debris, wash out well with warm water, and then let the patient go for a few days. When he next presents himself, apply the rubber dam, and then flood the cavity with creosote, borolyptol, or other good antiseptic. I myself prefer creosote in most cases. Then, by means of nerve-canal cleansers, wrapped with a few shreds of cotton dipped in creosote, carefully remove all the remaining nerve tissue and other foreign matter from the canals. Great care should be taken that none of the septic matter is pressed through the apex of the root, for, if this happens, trouble is *sure* to follow.

When canals are so small that it is impossible to penetrate them with the finest bristles, I say let them alone. I agree with Prof. Watling, that such canals are too small to give any further trouble by infiltration of moisture. Right here I wish to make one point most emphatic, and that is never to enlarge a root-canal by drilling. In my opinion, the practice of drilling out root-canals is most useless and hazardous—I might almost say criminal. I consider it impossible to successfully drill out a narrow, tortuous canal, and, as I have said before, entirely unnecessary. The best way, when a canal is to be slightly enlarged, is by the use of sulphuric acid. Very small canals can be penetrated by its use, which would otherwise be inaccessible. My way of applying it is by means of a broach wrapped with a few shreds of asbestos instead of cotton, as the latter is almost immediately eaten off by the acid. Sulphuric acid is also wonderfully effective in cleaning out putrescent canals. After using it, the tooth should be washed out with tepid water and the acid condition neutralized.

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*Read before the Toledo Dental Society, December, 1899.

After thoroughly disinfecting and cleaning out the roots, the next step is to carefully dry them. This often takes a long time, as the moisture gathers at the apex just about as fast as you can remove it. A splendid way of ascertaining whether the canal is dry is to touch the rubber dam, with the bristle or broach wrapped with cotton, every time it is pulled from the canal. The slightest signs of moisture can in this way be detected. As soon as dry the canals should be filled. There are dozens of ways of accomplishing this, all highly recommended by their various adherents; but, for my part, I can see no reason for any other material than the gutta-percha nerve-canal points manufactured by the S. S. White Co. They are convenient and cheap. Select one the proper size for the canal, dip in chlora-percha, and, with a drop of the liquid adhering to the end, quickly insert into the canal. It may be partially withdrawn one or twice, and used as a piston to force the liquid to the very apex of the tooth.

The remainder of the tooth may be filled with any material desired. Be careful not to fill the cavity too flush, for, should this happen, be it ever so slight, the tooth is almost sure to become sore. In fact, it is a common practice with me, if I intend crowning the tooth in the future, to immediately grind it down so that there will be no danger of it striking at all.

Now, before going on to the next class of teeth, I want to get opinions on certain cases, of which the following will be fair examples:

CASES IN PRACTICE.

A gentleman presented himself, requesting that a cavity in a second superior left bi-cuspid be filled. I looked at the tooth and saw no cavity; the anterior approximal and grinding surface contained a splendid gold filling. I told him as much, but he insisted he could put a sharp point way into the tooth. I asked him to do so, and he took a sharp-pointed excavator and really did put it into a hole having been drilled under the free margin of the gum into the pulp cavity. When this was done he knew not, as he hadn't been in a dentist's chair in years. The tooth never troubled him, but he wanted that hole filled up. I took out the filling, opened up the pulp cavity so as to get at the canals, washed it out and loosely stopped it with cotton. The next day he returned with a tooth (that had *never* troubled him before) *now* very sore, and the gum above swollen. I applied iodine, washed it out, etc., but for nearly a week he suffered. I saw him twice a day during that time, but was unable to give him much relief. At the end of the time I ground it down, so that there was no occlusion with the opposite tooth, took a fine broach and succeeded in getting through the apex of the root. After this the tooth got well rapidly, and has not troubled since. Now, why did this tooth give all this trouble?

Another case: First right lower molar containing large amalgam filling in grinding surface, also cavity in anterior approximal surface. In excavating the latter, was surprised at finding no sensitiveness. This and the color of the tooth led me to believe the tooth dead. I opened up into the cavity and found this to be the case. I flooded the cavity with oil of cloves, cleaned out thoroughly, etc., and filled immediately with gutta-percha. The next day, and for a good many days, the tooth was very sore. Why? In one case the fluids of the mouth penetrated the canals, and in the other case they did not. I might cite a great many more cases, but these will suffice to show the often unaccountable results of treating old dead teeth. Experience, however, has taught me not to fill the roots immediately. On the other hand, teeth devitalized by yourself and filled immediately rarely give trouble.

I usually devitalize by means of arsenic, leaving the paste in the tooth from twenty-four to thirty-six hours; then, after having removed the dressing, adjust the rubber dam and clean out thoroughly. The larger nerves can usually be removed without much difficulty with nerve-broaches, and the smaller ones wiped out with creosote. When this has been accomplished, and the canals disinfected (I always use creosote), dry out carefully and fill with gutta-percha points, as I have described.

Now, the points I consider most important for successful results, are:

First—Never to drill the canals.
Second—Disinfect thoroughly.
Third—Dry out thoroughly.
Fourth—Fill thoroughly.
Fifth—Where conditions permit, grind down the tooth.

ALKALINE SALIVA.*

BY M. H. FLETCHER, D. D. S., M. D., CINCINNATI, OHIO.

Miller says, "The saliva of cattle, sheep, dogs, rabbits, etc., is essentially strong in alkaline reaction," this may account for their perfect digestion, as well as their immunity from decayed teeth. This is not true of mankind, however, and in order to compensate for the physical defects of civilization, caused by eating prepared foods, the mouth should have conscious and continual attention. One demand seems to be that the saliva be artificially restored to its normal alkalinity.

Decay of the teeth may be arrested or at least proceed very slowly, when the saliva is normally alkaline, the contrary is held to be by some, but as stated, it is probably due to the strong alkaline saliva of animals that their teeth do not decay. The exception to this rule is found in domestic animals, or those kept as pets or in confinement, and fed upon prepared foods.

Lactic acid is formed in the mouth by the action of bacteria upon all cooked starches, and is thought to be the great cause of decay of the teeth.

A small portion of some of the sodium compounds dissolved in the saliva quickly penetrate the irregularities, or cavities in the

*Read before the Ohio State Dental Society, Dec. 6, 1899.

teeth, neutralizing the lactic acid of this ferment, as well as other acids found in the mouth.

The promptness with which sweets penetrate cavities in the teeth, producing pain and assisting decay, gives a hint as how to try to arrest this process.

The saliva is all ready in the places where the damage to the teeth is being done, and by utilizing it to dissolve a suitable alkali, the seat of the trouble is reached at once.

Normal saliva is slightly alkaline, but the alkalinity is so weak, that few mouths are capable of prompt recovery from an acid condition, neither is the alkalinity usually strong enough to counteract the acids of decay, hence it seems rational to endeavor to supply this deficiency.

The mucus, of which the saliva is partly composed, does not dissolve in water, ether, alcohol, or dilute mineral acids, but dissolves readily in alkaline solutions; hence, any attempt to wash the saliva from the cavities in and about the teeth, with anything but an alkaline solution, is much like trying to remove grease without soap—the undisturbed globules of mucus remaining filled with micro-organisms. The foregoing seems to indicate that an alkaline fluid is needed at the "Portal" of the body for protection.

It is an accepted fact, that the mouth is constantly inhabited by numerous germs, many of which are disease producing. Within the short space of an hour, the particles of food remaining in the mouth become filled with microbes of many varieties.

Saliva freighted with these germs being constantly swallowed, may produce fermentation in the stomach, which results in eructations, sour stomach, headache, etc. Clinical experience shows that a small portion of a suitable alkali allowed to dissolve in the saliva, and swallowed, will quickly correct the disorder.

If the saliva is kept in its normally alkaline state, or in excess of normal, many of the acid forming, fermentive, and putrefactive processes are prevented in the mouth, the saliva being swallowed in this purer state, assists digestion instead of interfering with it.

The physiology of the mouth and stomach are so related that a remedy which will arrest putrefaction and fermentation in one organ, may do so in the other, and mild alkalies are most accepted for this purpose, some form of soda being oftenest used, that of bicarbonate most frequently; this particular form is objectionable, however, because alkaline carbonates are utilized in producing lactic acid.

Considering the subject from the foregoing standpoint, the writer has for a period of years had it in mind to endeavor to meet these demands with a suitable mouth preparation, and for some months past has been experimenting to this end. The method of procedure was about as follows:

First. All things that were considered inefficient or objectionable in existing dentifrices and mouth-washes were excluded. The pulverized chalk, seashells, pumicestone, cuttle-fish bone, etc., seem always to have been used, and with this idea of polishing the teeth, but this it not what is needed, for their natural surface is the best, anything which polishes also wears, the object then should be, to keep them clean, and no more.

As far as the mechanical part of a dentifrice goes, if the earthy matters, usually employed, are coarse enough to readily cleanse the teeth, saw-toothed and other abrasions may follow with their evil results, and if they are so fine as not to produce this effect, little good from their use can follow.

Doctor A. H. Peck's analysis of a number of mouth preparations, proved that but one of many had the essential feature for the purpose desired, viz., that of alkalinity.

The only soluble alkaline preparations known to the writer which have been much used for the mouth, are those containing soap, but soap merely lubricates each particle of the powder, and the bits of food about the teeth, causing the brush to slip easily over, instead of removing them.

Soap will relieve the mouth of oils and mucus, as it will the skin, but does not remove the tartar nor destroy bacteria. Toilet soaps, as a rule, are not strongly alkaline, therefore can not neutralize the acids of decay to any great degree, nor can they be relied upon to cleanse or purify sufficiently.

The foregoing facts necessitated a new start, the demands being as follows:

First. To find a mechanical cleanser which would not abrade, and that a dentist might conscientiously recommend, and a patient feel free to use without danger of injury.

Second. The saliva must be utilized for dissolving an antiseptic and anti-acid, so that the cavities of decay would be penetrated by it, thus arresting caries, and, if possible, prevent its recurrence by continued use; the acids found in the mouth from any source, must also be counteracted.

Third. Something must be found which would act upon the mucous membrane, for the purpose of keeping it in health, or restoring it when it shows signs of disorder, also to be a suitable treatment for lesions of the gums or mucous membrane.

Fourth. With all these demands it was necessary to find a combination, the ingredients of which would be agreeable to each other, and acceptable to the stomach, for the saliva passes in almost a constant stream to this organ, a fact too little considered in treatment of the mouth.

Giving the results of months of experimenting without many details; the mechanical cleanser and menstruum was first taken up; something softer than the softest ivory must be used, so wood fibre, of many kinds, was first tried, with the result of making a very efficient dentifrice from cedar, boxwood, sandal-wood and other very fine sawdusts, but each had its own peculiar flavor, many of which were undesirable, some giving up tannic acid, also objectionable, and the woody fibre remained about the teeth and under the tongue with a disagreeable effect.

Finally the raw hard parts of various cereals were taken up with better results, and those of rice and Indian corn selected as being the best; these are to be used in the form of a coarse flour. This material is of itself a most efficient dentifrice, cleaning perfectly without injury.

The little blocks from the grains are like so much fine sand or emery in appearance, but are very much softer than the softest enamel, or dentin, consequently can not abrade them, yet they are harder than the particles of food, and of most deposits of tartar, and being usable in so much coarser condition than earthy powders, they are much more efficient, which a trial will prove.

The argument has been advanced that this material being starchy would only assist the fermentative process in the mouth.

This position is untenable from the fact that starch can not ferment until it is hydrated, and is only hydrated quickly, by moist heat, or caustic alkali.

As to the *chemical part* of the *question,* many things were considered and from various standpoints. Sodium borate and patassium chlorate, were finally decided upon as being the most suited to all the conditions, and to each other, they have proven to be clinically what they promised theoretically; the valuable therapeutic properties of both remedies are familiar to all physicians and dentists.

In the first place they are only slowly soluble in the saliva and both act as the best of mechanical cleansers before they dissolve. They are both alteratives, tending to restore the mucous membrane when it is abnormal, and each acts as a complement to the other.

The *borate* gives a decided alkaline reaction with litmus paper, first it is strong of the soda, changing into a sweetish alkaline taste, which is very agreeable in effect.

The meat packers of the United States alone use one thousand tons of borax yearly as an antiseptic.

It is used in antiseptic surgery to quite an extent, being free from irritating properties, and is an excellent dressing for wounds, ulcers, abscesses, etc.

Doctor Walb found that a five per cent solution of it would keep fibrin perfectly fresh for nineteen days.

Its value in medicine grows out of these properties, in addition to its peculiarly detergent, mildly stimulating and alterative action upon the mucous membrane.

In ulceration, diphtheria, and other inflammations of the mouth, crystals of it are allowed to dissolve slowly in the saliva.

In solution it is also largely used in skin diseases.

The internal dose is from thirty to forty grains.

Potassium chlorate and its medical properties are well known, it gives a neutral reaction with litmus, and will promptly change acid saliva to neutral.

Like borax, when locally applied it is an alterative and stimulant to the mucous membrane, and is equally valuable for stomatitis and pharyngitis.

When taken internally, it is continually eliminated with the saliva, coming in perpetual contact with the mucous membrane, thus continuing its beneficial work until entirely excreted by the kidneys. The internal dose is twenty to thirty grains.

It is held by some to be an oxidizer and in this way to purify and disinfect the mouth and stomach.

Another reason for its selection is its saline taste, and its consequent stimulation to the flow of saliva; alkaline saliva seems an undoubted aid to digestion, and if it can be induced to flow and be kept alkaline, many stomach disorders will disappear.

The two remedies act most beautifully together, each as a complement to the other, without danger of over-dosing. The mucous membrane becoming innured and hardened to the action of these remedies, would naturally offer greater resistance to disease.

The materials being selected, they had now to be combined in the proper proportions to assist each other, and to produce the desired results; clinical test was the standard selected to decide these points, and the preparation is now used very efficiently in the following proportions:

Pulverized cereal,	75 per cent.
Sodium borate,	17½ per cent.
Potassium chlorate,	7½ per cent.

Orris and menthol to flavor, and saccharin to sweeten.

The flavoring and sweetening can be varied to suit taste.

It requires at least five grains at a time of any powder to be at all efficient in cleaning the mouth and teeth, and double the portion is better; in every five grains of the above formula there is one and one-quarter grains of the combined remedies; this is sufficient to keep the saliva decidedly alkaline for some time after using. Its preservative and antiseptic properties are shown from the fact that, ten grains of the powder taken into the mouth and held until dissolved, then ejected into a test tube with a drachm of saliva, remained pure and unchanged for forty days, the tube remaining unstopped.

It seems apparent that with this prescription, teeth can be cleaned without injury, and that decay may be arrested; a small portion or a tablet made of it, allowed to dissolve slowly in the mouth, at frequent intervals, would tend to arrest decay, if it did not prevent it.

There seems little question, but that caries might be prevented if it were practicable to keep the teeth constantly bathed in a fresh strong solution of the powder; if we assume this to be true, then the nearest approach that can be made to it, the better for decaying teeth.

Doctor E. S. Talbot, of Chicago, who has been prescribing it for months, claims it to be a most valuable adjunct in the treatment of pyorrhœa (interstitial gingivitis), and my own observations coincide with his.

There are those here who have had experience with this formula, whose criticism would be acceptable, as will that of any one.

DISCUSSION.

Dr. Heise: The saliva as a rule is said to be acid from observations made, and it has been said that this acid condition is the cause of decay of the teeth. I do not believe this to be true, the cause of the decay of teeth is not the acid condition of the saliva but the presence of food which collects between the teeth, which, owing to the presence of a germ, undergoes decomposition and generates lactic acid which causes breaking down of tooth.

The essayist has given us a very able paper, but I do not believe he has said as much about the alkalinity of the saliva as he should have done. Dr. Fletcher has probably examined his own saliva and has found it alkaline because he is a vegetarian more or less.

In regard to the preparation that Dr. Fletcher recommends, I most highly endorse it to be used in the condition which he has stated. I have used it myself, and have given it to my patients many times and have found it better than any preparation I have had, to reduce that alkaline condition, also as a mechanical cleaner, it seems to answer the purpose better than the so-called preparations containing chalk, pumicestone and cuttle-fish bone. Especially in chemical abrasion which occurs near the cervical borders, I do not know of anything better. We do not get that scratching and scouring away of soft dentin as with the other powders, therefore I do not hesitate to recommend it.

Dr. H. T. Smith: I would like to call the attention of the essayist to some experiments made recently in the chemical laboratories of the Harvard College on decay of the teeth.

These experiments showed that generally in mouths where decay was most active the saliva was mostly alkaline, which certainly goes to prove that an alkaline saliva does not make the teeth immune to caries. Too much stress, it seems to me, is made on the fact, in the paper, that the tooth-wash or powder which he presents will make the teeth more or less immune from caries. An alkaline saliva while better than acid, does not in any case make the teeth immune to caries.

Dr. Wright: I have used this material and like it very much as far as taste and effects go. Personally I have always felt that it is a good thing to use alkaline or anti-acid preparations particularly for that sensibility of the teeth which often occurs. I have used this treatment no matter what laboratory has shown it to the contrary and no matter what clinical experience of others say to the contrary, my own clinical experience for twenty years has warranted the use of weak solutions of the bi-carbonate of soda and water, both for children's teeth and to ladies under certain conditions, and I have always administered it without making any experiments whether the saliva was acid or not.

Clinically I have had patients where the teeth were so sensitive I could not look at them, whether this was my fault I do not know; I used bi-carbonate of soda and made another appointment within ten days or two weeks and would be able to operate without any pain to the patient. I attributed it to the saliva. It may have been the effect of the prescription.

Dr. Fletcher's powder seems to feel in the mouth and on the gums and tongue as though it is sufficient abrasive to cleanse the teeth. I feel I can strongly endorse it for trial. It is safe, for Dr. Fletcher would not offer anything to the dental profession without care and study, and I must vote in favor of it until I have lost the use of my teeth from the use of it and then I will stop.

Dr. Taft: I have had a little experience with this material and have a very favorable impression of it. Taking into account its consistency I cannot see where anyone could find any objections to its use. It does its work well and is good for the mouth, and I think it should be used extensively. It is certainly a good deal better than a great many preparations now on the market. Anyone who has experimented with the desire, and I think you all know Dr. Fletcher has, to seek the best thing possible, their efforts of such character should be encouraged. He has assiduously pursued it with a sincere desire to find the best mixture or the best agents with which to form his powder. I know of no one who has so studied this subject. You know when he takes up a subject he puts his soul and body and everything into it for the time being and when it is completed he has the satisfaction of knowing he has done all possible. I think everyone of such character should be encouraged. I have given it to a number of patients, who seem to be very much pleased with it. I have told them there is nothing in it which is injurious to the teeth, which is not true with a number of preparations now on the market.

Of course I can hardly ascertain all that ought to be known about it in this very short time, but I think no one can criticise successfully the consistency of this material.

Dr. Fletcher: My efforts in this direction have been founded as stated in the paper upon what I consider accepted laws of chemistry. The teeth are largely composed of the phosphate of lime, it is not probable that any alkalies taken into the mouth would act on any portions of the hard part of tooth. These points accepted as facts have made me believe that any kind of acid coming into contact with the teeth would have more or less effect upon them. If the saliva is very mild in acid reaction I believe it assists those acids which are constantly forming in the mouth to destroy the teeth, whether it be lactic acid or something else; I think Miller and others have decided that it is lactic acid which is largely to blame for the decaying of teeth. The criticism of Dr. Smith, of Cincinnati, refers, I think, to those experiments made by Thompson and Dr. Hopkins and printed in October Cosmos.

Selecting from it a paragraph, we read:

"It is probable that lactic acid of the strength of one-half of one per cent is never present in the mouth, since it is found that in the majority of cases where dental caries is going on rapidly the saliva has a marked alkaline reaction, and that there is a great deal of it. It is possible that the irritation of the caries may increase the action of the salivary glands. The alkalinity of the saliva is usually more marked in these cases than in those mouths in which the carious process is absent."

My own observations coincides with these in a certain degree, where we have these extreme cases of rapid caries the saliva is abnormally acid; on the other hand I have in my own practice two cases where the enamel is affected from some other cause. One the patient is past 50 years of age and not one particle of decay where there is any enamel, and there is very little decay on any other part of the teeth. Now in that mouth the saliva is alkaline and has been so every time I have tried it, which has been for many years. I believe that is a typical case of good teeth and normal alkaline saliva.

My own test of saliva of animals has shown that that of the grannivorous, those which eat grain entirely, have stronger alkaline saliva than those which eat flesh. Nevertheless all the animals I have tried, horses, cattle, sheep, etc., all gave a good strong alkaline reaction to litmus paper. These animals did not have decayed teeth from this condition. In reference to those teeth which are known to exist with no decay for a long time, which are entirely devoid of enamel, I would like to read from this same number of the Cosmos, from letter of Dr. Williams referring to the letter written by Dr. Soderberg, and brought out in last part of article. It reads as follows:

"The one experiment, and this I believe an accident, on which the opinion is based that decay of dentin may occur without the presence of acids, can hardly be regarded by bacteriologists as of much significance. Some teeth were placed in an agar culture of bacillus gangraene pulpae and put aside in a closet. Sixteen months afterwards they were discovered. The cementum was softened and discolored, and the dentin somewhat less so, with the dentinal tubules enlarged. The agar culture, after having stood sixteen months, gave an alkaline reaction. There is nothing surprising about this, as several micro-organisms which are known to be acid producers would give an alkaline reaction after having stood in a culture medium for a much shorter time than sixteen months. There is at present no proof forthcoming that the culture was not, at some period of its existence, in an acid condition. But even if it should be demonstrated that any effect resembling caries of dentin can be produced in an alkaline medium, which I very seriously doubt, such a demonstration would not touch my position with reference to caries of enamel."

The editor of the Cosmos in commenting on this subject says:

"No observer in this department of bacteriological research has, so far as we are aware, shown that the fermentation of carbohydrates resulted in the formation of alkaline end products. On the other hand it has been demonstrated beyond reasonable doubt by Miller that the formation of lactic acid by the fermentation of carbohydrates through the agency of certain bacterial forms is the essential feature of the carious process in tooth-structure. Again, it is well known that dilute alkalies are without power to disintegrate tooth-structure, while it is equally well known that the action of even dilute lactic acid will bring about separation of the enamel prisms and, if long continued, disintegration of both enamel and dentin. These facts should be taken into consideration at their full value before it can be accepted as even probable 'that an acid is not essential to the carious process in the dentin.'"

So you see I do not feel alone in my position as to the fact that caries is due probably to an acid condition. That an acid saliva may very largely assist the acid condition which causes decay and that we can give to the patient something which can be used without danger of mechanical abrasion, it seems to my mind we have very good reason to prescribe such a remedy. I have been at work at this for two years and the results have been far beyond my expectations.

TRANSLATIONS FROM FOREIGN EXCHANGES.

CONDUCTED BY H. PRINZ, D. D. S.

[Translated expressly for Ohio Dental Journal.]

Flux for Soldering Gold Work.—Boracic acid, one ounce; ammonium carbonate, ten grains; sodium bicarbonate, one drachm; aqua ammonia, one-half ounce; water, four ounces. Boil all together till the mixture ceases to give up fumes of ammonia. Slightly paint the parts, which should be united by the solder, with the mixture. Z. F. Z.

Solder for Aluminum Plate.—A French patent is issued to Mr. Lancon for an aluminum-solder, which consists of aluminum, 95; copper, 2; antimony, bismuth, and zinc, of each 1 part. The aluminum must be protected by a flux, viz: a thin layer of phosphoric acid. Z. F. Z.

Iodine-Vasogen.—Dr. Popiel.—The author used with good result the 6% Iodine-Vasogen in about 100 cases of gingivitis and in the early stages of pericimentities. The solution will be very readily absorbed by the mucous membranes, and does not cause irritation when locally applied, which is rather often the case with tincture of iodine. The author claims of Iodine-Vasogen to be an excellent remedy for removing hyperamic conditions of the mouth.—*Odont. Blatter.*

To Prepare a Solution of Celluloid.—Mix 75 parts of sulphuric ether with 25 parts of alcohol in a well-corked bottle. In a few day, 3-4 parts of small pieces of celluloid should be added, which will readily dissolve and give an almost saturated solution. (This solution is an excellent medium for uniting broken plaster-models.)

Magnalium is the name of a new alloy invented by Dr. Mach, of Vienna. It is composed of aluminum and magnesium. Usually from 10-25 parts of magnesium are added to 100 parts of aluminum. The new alloy is very hard, takes a high polish, and can be cast in the same manner as aluminum. The specific gravity of the alloy is less than that of aluminum. The specific gravin all cases where aluminum has been used, and may replace it to a large extent.

NEURALGIA FROM A WISDOM-TOOTH.—DR. FUCHS.—A man 47 years old, suffered for 20 years severe pain in the right half of his face, about the lower jaw and the region of the neck. He consulted 20 physicians, and they treated him with electricity, purgatives, liniments hydrotherapeutics, applications of ice, etc., but without avail. He became deeply depressed, and had to consult a nerve-specialist of an asylum for the insane. Morphine, antipyrine, etc., were prescribed, till a physician had the happy thought to examine his teeth. The right wisdom tooth was found to be dipped over, the occluding surface resting against the 2d molar. Both roots were imbedded in the caronoid process, and had ball-shaped swellings about their apical ends. After a rather difficult extraction, the patient soon became well.

TROPACOCAIN INJECTIONS FOR LOCAL ANESTHESIA.—H. Albrecht wishes for a local anesthetic which would have about the same anesthetic effect as cocain, but without causing after-pain, delaying the healing of the wound, or difficult hemorrhage. Such a remedy has been found in tropacocain. The advantages of the drugs are:

1. It is three times less poisonous than cocain;
2. The anesthetic effect is quicker and lasts longer;
3. The motor centers and muscles of the heart are afflicted in a much less degree as in cocain;
4. The solutions can be used after months with the same effect, as they are antiseptic;
5. An addition of chloride of sodium removes the irritating quality of the tropacocain.

Albrecht uses it in 5 gr. solutions with 6% chloride of sodium. —*Odont. Blatter.*

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

PULP MUMMIFICATION.*

The fact that one essential factor in true mummification is dryness, and that, strictly speaking, animal tissue cannot be said to be mummified unless it is desiccated, might be passed without comment, were it not for the pathological significance of moisture as associated with devitalized pulp tissue in the roots of teeth, where, at a temperature approximating body-heat, it furnishes one of the indispensable elements of a culture medium for septic organisms; so that, granting that the "tanned" tissue is a mummified pulp, its dentinal encasement is far from being a typical mummy case in a mummifying environment.

Not less significant is the fact that the fluids derived from the blood serum, with which the walls of a root are bathed, not only supply moisture, but are endowed with a solvent quality under which almost any substance susceptible of gastric or intestinal digestion is, if left for a sufficient length of time in a root-canal, softened and generally dissolved and absorbed. This is evidenced by the ultimate disintegration and partial or complete disappearance of vaseline, wax, paraffin, salol and allied substances when employed as root-fillings. Hence the assumption that a pulp once mummified will remain a constant and changeless quantity in a pulp-canal is both theoretically and practically fallacious.

There is always a lurking danger in the presence in a pulp-canal of dead animal tissue, however fortified against decay. Its harmfulness or inocuousness are dependent upon a complex of conditions difficult to formulate. The most obvious fact, however, is that the danger from a dead pulp is directly as its bulk and inversely as its resistance to decay; inversely, also, as the resistance of the root investments to the morbific products of its putrefaction when decay does occur. The less the mass of putrescent matter, the less the volume of poisonous principles evolved, and the less the probability that the forces of tissue defense will succumb to their toxic power.

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*From editorial in Dental Brief.

Fortifying pulp tissue against putrefactive organisms by an arsenal of antiseptics stored up in the pulp-chamber as a base of supply to be indefinitely drawn upon, might be well enough could there be any assurance that the arsenal will not be captured by a flank attack around a leaky filling, or by invasion through a highly permeable apical foramen. But even if this highly probable contingency does not arise, there is every likelihood that the antiseptics thus far declared desirable and of approved value in pulp mummification will all, sooner or later, undergo absorption through the dentinal and cemental walls of the tooth.

The idea that the apical foramen once sealed those walls form an impervious barrier against the osmotic ebb and flow of solvent fluids, is not tenable; on the contrary, the dentinal tubuli and cemental cells, by their direct connection with the circulatory current of the peridental membrane, are kept charged with fluids in ceaseless molecular activity and responsive to all the influences, chemical or physiological, by which, through endosmotic and exosmotic processes, an equilibrium between them and the fluids of the pulp-chamber is maintained.

Under such conditions, only such antiseptics as are highly resistant to solution can for prolonged periods preserve their molecular integrity and antiseptic power. Of these, the most powerful are of inorganic origin and undesirable for purposes of root antiseptics, either because of their irritant quality or their discoloring effect.

The only effective way in which a pulp-canal can be maintained in an approximately aseptic condition is by sealing it, not only at both ends, but for its entire length. For the average case probably nothing more effectively accomplishes this than gutta-percha, which, by the aid of heated instruments, can be forced into quite minute prolongations of the pulp-canal, and can be packed firmly against the orifices of the dentinal tubuli. Others of the plastics, when thoroughly packed, are also excellent for the purpose. Tightly fitting metallic points, such as those of

Weld, are likewise effective, and have the advantage of being aseptic, a quality in which, owing to their porosity, the plastics are lacking. With such agents at our command, and such aids in gaining access to and removing the contents of pulp-canals as are furnished by dental engines, electric motors and improved burrs and drills, there would seem to be little, if any, excuse for abandoning, on the score of a saving of time and labor, methods of approved efficacy for one at best but experimental, and the percentage of failures from which, already formidable, is sure to increase with the progress of time.

USEFUL HINTS IN PRACTICE.*

BY A. M. JACKSON, D. D. S., MILLEDGEVILLE, GA.

The misfortune of "checking" porcelains has never come to me in crown- and bridge-work, and I give you my rules.

1. Always have your investments thoroughly saturated with water before applying any heat. If after investing you wait long enough for the water of crystallization to dry out before soldering, then thoroughly saturate the investment again with water just before applying the heat.

2. Make the investment hot enough to cause the borax to curl up before the flame is allowed to touch the crowns.

Keep a bottle of ammonia water convenient for cleaning your cement slab and instruments. Cement will not "set" or stick if covered with ammonia water.

To prevent trouble with the breaking of teeth from plaster casts while making partial dentures, place a few sections of your binding wire in the impressions of the teeth before pouring the model; these little wires in the plaster teeth on the model will make them strong.

Use modelling compound to hold the pieces of broken rubber plates in position while you pour in your plaster-batter before mending. Make the compound thoroughly soft (use plenty), have the pieces of broken plate dry and warm, press the compound firmly to the pieces, bring the broken parts in proper contact and hold the mass in cold water until the compound is hard. This holds the pieces in place while you pour in the batter for your plaster model.

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*Extract from Dental World.

A good, clear varnish for lining the bottom of cavities is made by dissolving pure, clear copal gum in equal parts of alcohol and ether.

ROOT-CANAL TREATMENT.

JOHN R. CALLAHAN, D. D. S., CINCINNATI, OHIO.

Notwithstanding the fact that so much has been written and said about root-canal treatment, I feel that many in the profession have not yet arrived at a proper understanding of the conditions and possibilities that attend this every-day operation.

I believe that ninety-five per cent. of the partial or complete failures in this class of cases is chargeable to the lack of knowledge, skill or courage on the part of the operator; the other five per cent. may come under the head of impossible cases.

By failure we mean those cases where there is a recurrence of the abscessed condition; by partial failure we mean the so-called lame tooth, or those in which there are periods of soreness, as the patients say. * * * Nearly all the literature on this subject stops with considering the condition of the root, overlooking the conditions beyond the apex. Here we have septic conditions to meet, to say nothing of caries, necrosis, resorption, etc., and, difficult as they may be, these conditions are often met and overcome, a feat showing the greatest skill and determination on the part of the dentist. Yet I say that most failures can, in my opinion, be traced to lack of courage to face an unacknowledged danger, or, in other words, a fear that lurks in the mind of almost every dentist; yet if accused he will not admit it. To properly perform the operative procedure involved in some of the most difficult cases requires hours of skillful and exhausting labor—skillful and laborious in every sense of the word.

Operations consuming a like amount of time, labor, skill and responsibility, if performed by any other specialist, would be

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*Extracts from article in Indiana Dental Journal.

cheerfully rewarded with a fee of twenty-five to a hundred dollars, yet the dentist knows that for his large expenditure of time and vitality he will not receive the price of a good pair of shoes, and little or no credit for his skill and endurance. He feels that he does not dare to charge a fee commensurate with the service rendered.

Suppose the dentist values his services at five dollars per hour. A difficult case consumes an hour at the first sitting, a half hour at the second sitting, a half hour at the third sitting, and another half hour at the fourth sitting, when the canals are filled. The patient is then told that the tooth is now ready to fill and has cost, so far, $12.50. What will be the result? Does the operator fear the opinion of that patient? No, I think not. He can soon satisfy the patient of the justice of this very moderate fee; but wait until that patient meets a neighbor dentist, either in person or through patients who are neighbors or acquaintances. Dentist No. 2 says in the most quiet and subdued manner, "Well, I guess I don't know how to charge; I never get more than three or five dollars for such an operation." Now, No. 2 is a good dentist, a little behind the times, not an expert, not an idealist, not a student, but still a good dentist, honest and gentlemanly, stands well in the community, and has a good practice because, along with his many excellent qualities, he is always careful to charge a little less than his neighbor dentist. This is the influence that makes you quake in your boots when your respect for yourself and pride in your profession causes you to feel that for principle's sake, if for no other reason, you should demand and have a fee that will allow you a small mite of self-respect and that will create a greater respect for you in the minds of the community. And the community would be perfectly willing to grant the fee and the respect but for the influence of the man of standing—dentist No. 2—who intimates that your fee is excessive. Therefore dentist No. 1 says to himself, "I can't afford to devote so much time, thought and labor to the treatment of these difficult cases. I don't dare charge what the operation is worth. I must do it quickly, easily, mummify it, stuff it with cotton, anything to be quick and cheap, and take the chances." This very condition makes cowards of us all. Now, I dare say, many of you will not be willing to admit that it is through fear that you do not spend the time that is frequently necessary to thoroughly prepare these cases. If not fear, then why is it that we do dislike and often dread and shun the more difficult cases—why are we not willing to spend hours, if need be, on them? Is it because the results do not justify the expense? We spend hours in the placing of fillings in the crowns. I ask of what value is the crown filling in comparison to the condition of the root and adjacent tissues?

Isn't it true in all departments of business and professional life that a man will do those things best for which he knows he will in some way receive a proper and just reward; or, may we say, as a rule, the greater the reward the more proficient the service?

If this be true, then we may say that the dentist who always endeavors to be cheaper than his neighbor dentists hangs as a dead weight about the more energetic and progressive element of the profession.

Say what you may, a man's service will in time drop to the level of the fee that surrounding circumstances may compel him to accept.

During the last two or three years I have received letters from dentists residing in all parts of the country, asking for the details of my method of treating root-canals. * * * The first step in the treatment of any root is to gain direct access to the canal, by a funnel-shaped aperture, so that a broach may be passed into the root with absolute certainty, in the dark, even. Direct access must be gained even at the cost of the sacrifice of considerable crown tissue. The root is of greater value to me than the crown. When a full, free and direct opening to the root has been obtained, the disintegrated pulp tissue and pus must be removed, if present. This should be done by the most careful and painstaking instrumentation. If pus is present, hydrogen dioxid may be used. If the canal is filled with moisture, the greatest care should be exercised not to use a broach, paper cone or any other substance in such a manner as to force the contents of the canal through the apical foramen. In order to satisfy yourselves how easily this latter mistake may be made, I advise every dentist to take a disassociated tooth with an open canal, fill the canal with water colored with eosin, or other matter that will render its presence on the outside of the root easily detected, and then endeavor to use a broach or pledget of cotton in the canal. Only the most delicate instrumentation will prevent the contents of the canal being forced through the foramen.

After the canal has been reasonably well freed from pus, disorganized pulp tissue, and putrefactive matter, by the use of hydrogen dioxid and careful instrumentation, I dry it out with paper cones, still using great care not to use them so as to form a piston before which moisture may be forced through the foramen. The canal should then be filled with alcohol and a hot wire introduced. I use a wire heated by electricity, but the Evans root-canal drier, or even a simple wire heated in the flame of the alcohol lamp, may be used. The alcohol combines with the water remaining in that portion of the tubules adjacent to the pulp canal, and the diluted alcohol is evaporated by the heat of the wire. This treatment should be continued until the dentin lining the root-canal is thoroughly dessicated.

The reasons for this are twofold. Dessication is, in itself, a sterilizing agent. But a more potent reason is to be found in the fact that wet dentin presents greater difficulties when the use of a Gates-Glidden drill is contemplated than dry dentin. More failures in the use of the drill in canals is attributable to wet dentin than any other cause. More broken drills are due to wet dentin than to carelessness in handling.

The next step in the treatment is the use of sulphuric acid in the canal. In my opinion, a forty per cent. solution of commercial sulphuric acid in water will give the best results in the majority of cases. I have used as strong as a fifty per cent. solution to advantage. If the solution is stronger than fifty per cent. it has a tendency to disintegrate the cotton on which it is most convenient to introduce it. With a drop or two of the sulphuric acid solution at the entrance to the canal, I use a new broach, pumping the solution into the canal in the manner that is familiar to you all. This pares away all rough places in the canal and disintegrates the inorganic constituents of the dentin with which it comes in contact. After reaching the constriction at the end of the root, or, if the case seems to call for it, before that time, I introduce a few drops of a saturated solution of sodium bicarbonate. The chemical reaction between the sulphuric acid and the sodium bicarbonate results in the formation of carbonic acid gas. If enough of the acid and alkalai are used, audible explosions of carbonic acid gas may be heard issuing from the canal. This is an event to be desired and looked for.

In this connection it may be well to state that occasionally a broach may be broken off in the root-canal. When this occurs no effort should be made to remove it by instrumentation. Such an effort is almost certain to result in the fragment being pushed further into the canal, and possibly wedged firmly down near the apex. As soon as it is ascertained that a fragment of broach has been broken off, the canal should be filled with the acid solution and some of the sodium bicarbonate solution placed in the crown cavity or pulp-chamber. As the alkali works its way rootwards, successive explosions of carbonic acid gas will occur, until eventually gas will be formed by the action of the alkali on the acid in the root-canal beyond the broken broach, and the latter will come up into the crown cavity in a boiling, frothy mass of matter. This seldom fails.

When the apex of the root has been reached and the walls of the canal have been smoothed by the broach and acid, the dentin should be again dried with alcohol and a hot wire, and drills should be used to enlarge the canal. At least two sizes of drills are necessary, as the object is to give the canal a cone shape with the apex at the end of the root. The use of the acid renders the following of even quite crooked canals an easy matter. The acid partially disintegrates the mineral matter of the dentin, which, when dry, is most easily cut away.

The enlargement of the canal also serves a twofold purpose. It renders the introduction of dressings, medicaments or root-canal fillings an easy matter. But, more important than that, it cuts away the zone of dentin along the canal, in which it is reasonable to suppose disintegration of the organic matter and consequent infection has occurred. That is a most important achievement. The removal of this infected dentin also leaves the open mouths of the tubules ready for any medication that may seem necessary.

I said before that if there is caries in the crown at all it is fair to suspect infection of the dentin adjacent to the canal. Miller proved this by showing cases where the micro-organisms of decay had passed through the tubules of the crown of the tooth to the pulp-chamber and down the pulp-canal fully half way to the apex, disintegrating the fibrils along the walls even before serious less of tissue had occurred in the crown. And I also stated that if there were good grounds for suspecting infection of the entire area of the root-canal infection of the tissues beyond the apical foramen must be considered. On the principle that "prevention is better than cure," I treat every case of partial or total cessation of function in the pulp the same. In these cases I proceed as above described, except that I get a free opening through the apical foramen into the tissues beyond. I do this usually with a drill. When an opening has been obtained I pump sulphuric acid through into the tissues beyond, following it with the sodium solution. If diseased bone is present, the acid has a most beneficial effect upon it. If no diseased bone is present, the acid, if followed up with the alkali, produces no ill effects.

If a so-called "blind abscess" exists, this method of treatment is most beneficial. If a fistulous opening exists, I pump the acid clear through until it comes out on the gum. In case of a recurrence of the abscess after the root has been filled, or in case of a very crooked root with a blind abscess on the end, I inject the gum with nirvanin, make a crucial incision, dissect back the flaps and make an opening through the alveolar wall to the end of the root. I then amputate the end of the root and burr away the bone freely. This operation is much easier and simpler than extracting a tooth, and the percentage of absolute cures is very high. It is almost a certain result.

I use chloro-percha and gutta-percha cones with which to fill the canal. I am not strenuous in regard to the material with which the canal is filled. The treatment of the canal, therapeutic and operative, is of more importance than the filling material, although the latter should be the best of which we have any knowledge. Gentleness in introducing the filling material is of the greatest importance. Hasty introduction of the gutta-percha cone may make air pressure through the foramen that will cause great pain, pain that cannot be relieved until the cone is withdrawn.

A FEW PRACTICAL POINTS.*

BY DR. C. B. COLEMAN, POPLAR BLUFF, MO.

After perforating rubber dam, rub a small quantity of vaseline over surface coming in contact with the teeth. It will greatly facilitate the entrance of rubber between the teeth, and prevent tearing over any sharp points.

In building up fillings to restore the occluso-proximal surface of incisors, it is usually desirable to retain the labial enamel plate; however, in some cases this plate may be so nearly transparent as to show the gold, causing an ugly, yellowish discoloration. This may be remedied by placing a piece of paper, cut from the mucilaged portion of a government envelope, just under the plate and building gold out against it.

A piece of ordinary absorbent cotton twice the size of a pea, saturated in sandarach varnish, and placed over the mouth of Steno's duct, with a large piece of bibulous paper to hold the former pellet in position, will check the flow of saliva sufficiently to allow the treatment of superior molar teeth or the insertion of simple fillings.

The smallest size inverted cone burr will make an undercut into which gold will pack without any difficulty.

A little quantity of thick shellac varnish rubbed on the fast pulley of a lathe head will prevent the annoyance of a slipping belt.

The shade of a porcelain tooth can be changed to a darker tint by carefully heating over an alcohol flame for a few minutes.

In repairing rubber work, a little cement made by dissolving ordinary vulcanite rubber in bisulphide of carbon, painted over the surface where union is to take place, will make a more nearly perfect joint.

When not in use, keep your hypodermic syringe filled with water. The needle being removed, insert the small wire previously dipped in glycerine. In this way the packing remains moist and the needle will not rust.

In treating posterior teeth, cut broaches off about one and one-half inches long and roll modeling compound, previously heated, about end. This serves as a convenient handle and can easily be rotated between the thumb and finger.

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*From article in Items of Interest.

A great many dentists prefer making their own base plate-wax. The following will make a sheet of uniform thickness:

Take two pieces of ordinary glass, say eight by ten inches. Have both warm, dry and oiled. Place first piece upon a flat surface and at each corner lay a small block of wood the thickness of wax desired. Pour a sufficient quantity of molten wax upon the plate and quickly lay second glass over first, pressing the same until each corner touches the gauge-blocks. You will be surprised at the very satisfactory results.

DISEASE OF THE MAXILLARY ANTRUM SUCCESSFULLY TREATED THROUGH A ROOT CANAL.*

BY C. R. MARSHALL, DETROIT.

A pulp died in my left superior molar and I was seized with severe rhinitis and profuse muco-purulent discharge of an offensive nature. The drill was applied and had scarcely gotten in motion when it suddenly plunged through a mere shell of amalgam, with which the crown of the tooth had been capped, giving exit to a small quantity of foul smelling pus. Further examination revealed the fact that one canal was freely open and communicated with the antrum, into which a slender probe could be readily passed, while the two remaining canals contained live pulp. The latter were cleared of their contents and filled, and appropriate treatment was begun in the open canal.

To my intense gratification the discharge from the nostril immediately ceased, but it would as promptly return whenever medicated cotton or any other impediment to free drainage was placed in the canal; indeed, the prospect of saving the tooth seemed to be as remote as ever. * * *

I found that I could readily pass the needle of an ordinary hypodermic syringe well up through the root canal, and by that means was enabled to thoroughly wash out the antrum, first with dilute hydrogen dioxide and next with an antiseptic solution. Perfect drainage fortunately existed through the nasal foramen, by which route all detritus came away freely. In a few days I discovered that it was no longer possible to force fluids into the antrum, as the sinus had evidently closed. After that occurred the nasal discharge never again reappeared.

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*Extract from article in Items.

The next step was to check the formation of pus at the apex of the diseased root. To that end various antiseptic solutions were persistently employed for several weeks, but as often as applied the peroxide test would reveal the presence of pus. * *

I at once began using euthymol, diluted with three parts of sterile water, for injecting the root canal, keeping the pulp chamber constantly packed with cotton saturated with euformol. As the latter contains formaldehyde, I thought this volatile substance would perhaps penetrate further than fluids into the apical pus cavity, and, permeating the entire canal, would tend to keep it aseptic. These applications were continued for several weeks, until at last the action of euthymol and euformol proved to be positively germicidal and therefore curative, for all evidences of the presence of pus had disappeared under their use.

The canal was now filled with a mixture of iodoform and some excipient, the nature of which I do not recall, and the pulp chamber was packed with cement. As several months have since elapsed, I feel well satisfied with the result, for I have escaped what might have proved a very serious condition, and moreover I have now a useful tooth.

THE DETAILS OF CONSTRUCTING A PORCELAIN BRIDGE.*

BY G. W. SCHWARTZ, M. D., D. D. S., CHICAGO, ILL.

It is here intended to make clear many of the points in constructing a porcelain bridge that have given porcelain workers much concern, causing many to abandon the work.

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*From article in Items of Interest.

I will take for illustration a right superior bridge from the cuspid to the second molar, inclusive. We will suppose the roots are properly filled, and everything is ready to begin the preparation of the roots to be used as the abutments of the bridge.

I usually begin first by making a platinum cap for the second molar. I make a platinum cap for such a case because a long porcelain bridge is more likely to fracture than a short one. In this case it reduces the length of porcelain one-fifth, thus lessening the chances of fracture. If it were a four-tooth bridge from a cuspid to a first molar, the patient's first molar easily seen by the casual observer, I would make an all-porcelain crown for the first molar, cutting the root even with the gum, making an abutment in just the same manner as I would for the cuspid root.

In preparing the root for the metal cap I first cut down the tooth as near the gum line as desirable. I usually reduce the length of the crown of the tooth to about one-fourth its original length with enamel cleavers. I trim the sides of the remaining tooth structure sufficiently parallel so that I can fit a band that will not destroy the interdental space, nor irritate the gum buccally nor lingually. The second molar now being prepared, I am ready for the measurements (to cut the metal) to make the band.

I prepare this abutment first because I may want to prepare the cuspid at another sitting; for aesthetic reasons the patient might be annoyed at being without a cuspid longer than is absolutely necessary.

I usually take the measure of the root with fine binding wire. I always cut my band longer at the occlusal than at the cervical because we must contour the band to get the flare at this part. By soldering the band in this way, we can trim down and get a perfect crown shape on this part of the band. When the band is properly festooned and fitted, the occlusal end should be filed and should be fitted perfectly square together and soldered with thirty per cent platinum solder. If this is not done it is better to cut the band a trifle longer and make a lap joint. I plan the joint on the mesial part of the tooth, as it is afterward covered with the saddle.

Having the band fitted on, fill it with either modeling composition or plaster. Have the patient bite correctly, then remove the band and bite. Carve the cusps directly to this bite. Make die and counter-die from an impression in moldine, strike up two cusps of platinum and solder them together with platinum solder. File them down until they are the proper length to be soldered to the band. They should be filed and honed until they are smooth and fit the band end to end, making a close joint. After they are soldered together we have a platinum cap that is twice as thick on the cusps as it is on the band, and if it is all made of twenty-eight gauge platinum, it is heavy enough to stand any strain put upon it. All that remains is to polish it. If properly constructed, it will occlude exactly when fitted on.

Next, the cuspid-root should be cut off square to the gum line and the labial surface beneath the free margin of the gum should be beveled. All other sides should be parallel. This is beveled labially because the facing can be ground to cover the band, and when completed will look as though it were a natural cuspid coming out of the gum, thus avoiding detection. Before the enamel is trimmed off a measure should be taken and laid away until needed.

When the metal is cut for the band it should be cut a trifle short to make allowance for the bevel on the root. The band should be driven on and made to take the shape of this bevel. This can only be done by having the band the size of the smallest part of the beveled root. After I have my band fitted I file and hone it down until it is even with the root, then solder a piece of iridio-platinum on for the cap, all of which is twenty-nine standard gauge. Having enlarged the root canal for a good sized post, punch a hole in the cap with a plate punch and file square with a small square jeweler's file, until it is large enough to take the square post, which should be about sixteen gauge and of iridio-platinum. Next fit the two in proper position on the root, letting the post extend out of the cap half the length of the tooth. If the post has been tightly fitted, it will bring the cap along with it and can be easily soldered, but if it has been loosely fitted, it will need to be invested to be soldered.

The pin is left long because it will be needed to solder the bar and pins to later. The joint between the bar and the abutments must be well made or we cannot hope for any degree of success. This is where most of the failures occur in the metal work, the frame to sustain the porcelain.

Having the abutments finished, place them on the roots in the mouth. Take a wax bite; next a plaster impression with the abutments in place. If they do not come away in the impression, remove them and replace them properly in the impression. Fill these abutments nearly full with melted wax before running the cast in the impression. This is to facilitate their removal from the model when it will be required later in soldering the bar, saddle, etc. When I run the cast in the impression I always allow it to extend an inch or two at the heel, so that I may make a plaster articulator when I run my cast in the wax bite. By doing this we have the normal occlusion. I cannot use the crown or bridge articulator as satisfactorily as I can the articulator made in this way.

After your models are made in plaster, take an impression of the model with the abutments in place in moldine, run a fusible metal die and counter-die. This is to be used for swedging the saddle, which should be very narrow on the ridge; I should say ordinarily, a saddle one-sixteenth of an inch is wide enough. The saddle should extend well on the mesial surface of the molar cap and cover the bottom of the cuspid, passing each side of the square post.

I usually build on a little wax at each approximal space on the model before I take the impression in moldine to run my dies to swedge the saddle. This is one of the places where I have seen failures, and have tried to remedy it by relieving the pressure at this point, which is distal to the cuspid and mesial to the molar. I have had hypertrophied growths at these points, and believe they were caused by the pressure of the saddle on the gum. It was on this account I introduced a double bar bridge about two years ago, which many dentists have approved and are now using instead of the saddle bridge.

Having the saddle swedged ready to solder, carefully remove the abutments from the model and melt the wax out of them.

Replace them on the model, take impression of them in place on the model in modeling composition. The cap and crown should come away easily in the impression. Run a soldering cast in this impression with the abutments in it, and solder the saddle in place on this cast. This should be done with twenty-five per cent platinum solder. The saddle should be made of twenty-eight gauge platinum.

Having the saddle soldered and the abutments replaced on the original plaster model, grind in the facings to their proper position, waxing them in place. Varnish the buccal surface of the model with sandarach. Let it dry, and flow plaster over the buccal surface of the model and facings, including the adjoining plaster tooth on each side. Remove the wax from the pins and saddle, fit in an iridio-platinum bar under the pins and well against the facings. The part of the bar that comes in contact with the molar cap should be flattened out so that a broad surface will come in contact with its lingual portion. This is to get a good strong joint, as this is the point where I have seen most of the failures in porcelain bridge work.

Sixteen or eighteen gauge is the size bar or wire to use. The metal work must not be too light, as it will bend if it is, nor too heavy, as the porcelain will be liable to break away in this case.

Having the bar properly fitted in place, tack it to the cap and post of the cuspid abutment and molar cap with sticky wax. Now remove the teeth from the model, having them in the plaster investment. Put them aside for the present. Remove the metal work from the model and invest it through the center with a soldering investment. Remove the sticky wax, solder each end of the abutment to place. Remove the investment and replace the metal work on the model. Grind the pins in the facings flat where they come in contact with the bar. This is to give contact surface for the solder. If a round wire is used for the bar, flatten it also at this point for contact of the pins. Replace the facings in the investment back on the model. Wax the facings in place with sticky wax again and cut away the plaster investment from the teeth. The teeth will occupy the same position they were set in at the beginning. Varnish the buccal surfaces of the facings with sandarach. This is to prevent the investment burning on the teeth. They will come out of the investment clean, if this is done. Invest them, remove the wax without boiling.

Before soldering the pins to the bar, a stay should be put in between the bar and saddle midway between the cuspid cap and the molar cap. A wedge should be put in each end, one at the distal of the cuspid, and one at the medial of the molar, just between the saddle and the bar. This should be all soldered with twenty or twenty-five per cent platinum soldier. This makes it sure that the teeth will not change position going through the furnace. This done, the metal work is completed. The case is ready to receive the porcelain.

To be able to bake a porcelain bridge, one must know the anatomy of the natural teeth and how to carve. This can be accomplished only by careful study and much practice. Not many instruments are required, but a knowledge of their use is essential. I use a small spatula and an instrument for tracing the cusps, a medium sized screw-pin vice, a small keyhole saw, two artists' brushes, No. 3 and No. 0.

Put the post of the cuspid in the screw-pin vice. This makes a convenient way of handling the piece without danger of dropping it or getting the carving out of shape in handling. Begin by building up the molar first, slightly exaggerating the size, making allowance for shrinkage, next the second bicuspid and so on until it is completed and ready for the furnace.

To get the porcelain properly baked, when carving, from time to time, the saw should be drawn across the pin while holding the case. This brings the moisture to the surface much quicker than by tapping. The moisture can readily be absorbed by an old clean piece of linen or absorbent paper. The work should be jarred down as much as possible before baking, as this reduces the shrinkage to the smallest degree and insures better porcelain. After the piece is carved, it may be put on the model and tried for articulation, which should be made a trifle full and allowed to shrink in the furnace. After the first bake, the piece will look different from the form first fashioned, being full of cracks and much shrunken. These should be filled up with new body and baked again, which is usually sufficient if no gum enamel is used. If the gum enamel is to be used, this should be done at a third baking.

THE USE OF SOLIDIFIED FORMALDEHYDE IN TREATMENT OF ABSCESSED TEETH.*

BY F. B. LAWRENCE, EL DORADO, KAN.

The description of my treatment and success with one blind abscess that refused to become amenable to all my known methods of treatment will describe for all—to me, at least—the almost wonderfully successful results.

Mrs. R., aged 25, desired a bridge of three teeth; one of the abutments was a superior right canine, pulp dead, and from the cologne disseminated, would say that it had been dead about one hundred years. Removed said corpse, absorbed all pus possible with paper points, washed with pyrozone, dressed with creosote and cotton and dismissed for forty-eight hours. She was back in twenty-two hours and "hadn't slept a wink all night." I labored assiduously with that tooth for three or four weeks. Three different times I placed a trial root-filling of gutta-percha point and as many times removed the same the following morning. The last time, standing before my table, wondering for professional and financial reasons how I could conquer that tooth, my eye fell upon a bottle of pure formaldehyde in solid form prepared by Dr. George Scinniger. Knowing the unique effects of this powerful gaseous germicide (which I burn in my office nearly every Saturday night, especially if epidemics are prevalent), I reached for it, in despair filled the pulp chamber with the same, placed cotton pellet and dismissed the case until the next morning. She returned on time and made the surprising statement, "It hasn't hurt a bit." Removed cotton and found formaldehyde gone; made another application; in forty-eight hours filled root and in two more days prepared root and completed the bridge.

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*Extract from Article in Western Dental Journal.

Six weeks later I had the satisfaction of hearing her say: "It is the best tooth I've got."

The ability of this gas to work beyond the apex of the root, follow the tubuli of the dentine to the cementum, its ease of application and the absence of strangling fumes as in its aqueous solution, and my success with every tooth treated, compels me to believe that in solidified formaldehyde is found the "sine qua non" for dead teeth in all stages and environments.

A NEW SOLDERING INVESTMENT.*

BY W. BOOTH PEARSALL, DUBLIN.

This is a powder, is sifted from the decomposed granite known as "cornish stone," from which is prepared the "cornish clay" used in the potteries, known to science as "kaolin," and is the principal ingredient in the manufacture of porcelain.

William Cookworthy, the famous potter of china in Plymouth and Bristol, was the first to discover kaolin in Cornwall about 1755. It derives its name from a high hill near King-tik-chin in the Celestial empire, named Kao-ling or "lofty ridge." Cornwall is the only county in Britain which supplies this mineral. It is also found in Nebraska and some of the Eastern States of the United States of America. * * *

This powder is of a gritty nature, composed of grains of different sizes. The larger grains will pass through a sieve having twenty-four meshes to the linear inch. The smaller grains are finer than the finest pumice powder. The sand should be used in the proportion of two parts of sand to one part of plaster of paris, with sufficient added water to make such a plastic mass as will successfully bed the work to be soldered. * * *

As a polishing agent for vulcanite this sand, compared with pumice, is much more effective. With felt cones or cork the vulcanite surface is more rapidly polished than by the use of sand paper followed with pumice. As I have said before, the ordinary assistant will not like it because of its coarseness as compared with pumice. I am satisfied, however, that it is a more rapid agent for polishing vulcanite work, and the practitioner will do well to disregard any opinions about coarseness, and have its qualities thoroughly tested by himself. I scoured an old vulcanite plate in order to test the matter, and found no difficulty in more rapidly restoring the defaced surface than by the usual method.

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*Extract from article in British Dental Journal.

It is not a good material for polishing gold, as it makes severe scratches on the soft metal, which takes some labor and time to efface.

USES OF RIGHT-ANGLE DISK MANDREL.*

BY DR. S. H. NECAFFEE.

Many are doubtless unfamiliar with the usefulness of the right-angle disk mandrel, or disk mandrel for right-angle hand-piece. For a long time I suffered for the lack of something, I knew not what, until I began to use this very useful little device. Upon inquiry, among several operators, I found that it is not generally used, therefore I offer this suggestion in its behalf.

Among the many uses it can be put to, I mention, first, to carry a small cup-shaped carborundum or corundum stone, which can be very advantageously used in preparing abutments for crowns. It is especially useful for removing the enamel on the disto-lingual and disto-buccal angles of the molars, both upper and lower—particularly the lower. With it you can revolve the stone against the tooth in a direction absolutely unattainable with the straight hand-piece unless you stick it through the back of the patient's neck.

It is also very useful for carrying, polishing disk for finishing fillings between the lower bicuspids and molars. For example, to polish the cervical margins of a mesio-approximal filling in a lower molar in a constricted mouth. It is almost impossible to make a disk touch this point with the straight hand-piece.

Put the disk on with the grit side toward the body of the hand-piece in the mouth with the gear toward the fauces; the disk will then revolve so as to miss the "knuckle," and touch the cervix. There are numerous other points that may be reached "around the corner" with the R. A. disk carrier with great comfort.

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*Condensed from Dental World.

Another useful feature is in polishing teeth with rubber cups. With a cup mounted in this manner the disto-buccal and disto-lingual surfaces of the bicuspids and molars can be comfortably reached. The use of pumice, however, is not good for the hand-piece unless care can be taken to keep it out of the cogs. For this I use an old hand-piece of which I am not particular as to wear.

CROWNING BADLY DECAYED ROOTS.*

BY DR. R. M. SANGER.

Badly decayed roots, with one side gone far down below the gum-margin and the canal enlarged by decay to a cone shape, and yet with sufficient strength to carry a crown, if it could be accurately fitted and fastened, often present themselves for our consideration. The edges remaining above the gum are cut down with a facing instrument far enough to conceal the joint, and the canal is cleansed and prepared for the reception of the pin.

A piece of soft platinum foil is rolled into the shape of a cornucopia and placed as far up in the canal as possible, and allowed to extend well down beyond the gum-line. It is then packed nearly full of cotton or bibulous paper, which forces it against the walls of the canal, and while the cotton and platinum are held in position with a hand-plugger the protruding portion of the platinum is burnished over the edges of the root and gum and shaped to restore the contour of the root where it is broken down. The cotton is then withdrawn, the platinum cornucopia removed, and the flaps soldered with pure gold. A piece of 18-gauge square platino-iridium wire about one-third longer than the platinum shell is filed to a point, placed in the cornucopia, and caught at the apex with a little pure gold solder. The piece is again placed in the root in order that the pin may be given the desired direction without bending the platinum shell. It is then removed, filled with body flush to the edge, and baked. The overlapping platinum is carefully cut away and the piece put back in the root. We now have a perfect-fitting dowel with a shoulder extending out to the margin of the gum sufficiently to admit the attachment of a crown. A cross-pin facing having long pins is selected and set in position on the dowel in the mouth, and the pins bent around the protruding post, much after the manner of the How crown. The whole is removed, built up with porcelain on the palatal side, and baked. This usually requires to be done twice where so large a quantity of body is used. The piece is now ready to be cemented in the usual way.

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*Condensed from Cosmos.

Note that in this place the platinum foil is not stripped off, but remains as part of the pin, and, being slightly serrated with the sharp blade of a penknife and completely filling the canal, the minimum quantity of cement is required, making the strongest hold it is possible to obtain.

DEATH FROM TETANUS CAUSED BY AN ABSCESSED TOOTH.*

BY H. A. M'GRUDER.

On August 13th, 1899, I was called in by Dr. L. to extract a tooth for a boy aged 14 years. We found the boy then suffering from a severe case of trismus. The upper and lower extremities being almost stiff, and with great difficulty he could walk across the room. When asked to open his mouth, could only get his teeth about one-fourth of an inch apart.

The left inferior first molar seemed to be the seat of the trouble, so I advised extraction. We then placed him on a table and Dr. L. administered chloroform and I extracted the left inferior first molar and a right superior bicuspid.

On Tuesday I saw the patient again, and he could open his mouth normally, and could walk around very well, though his limbs were still a little stiff, and he had some fever.

On Tuesday, however, he developed a genuine case of tetanus, and on Sunday afternoon died.

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*From Dental Clippings.

METHOD OF BANDING A LOGAN CROWN.*

BY DR. L. O. GREEN, CHICAGO.

For illustration I will select the upper left central, taking for granted that the crown has been excised and the root canal filled at the apex. In cleaving the enamel from the root I use Dr. Case's cleavers and Dr. Prothero's root-finishers. The root being devoid of all overhanging enamel, the measure is taken; cut, solder and fit the band. Now remove the band and with safe sided root-facers numbers seven and eight cut away the root on the labial until the band, which is also cut on the labial, is buried under the gum tissue. The lingual portion of the root is cut just to or slightly below the gingival line. Remove the band and solder on the floor, using twenty-two carat gold solder; now we have the cope, which place in position and proceed to grind the crown until it fits the cope at the labial, after which grind a slight incline on the lingual extending from the central portion of the tooth at the base of the pin to the lingual edge of the crown. Now take a piece of pure gold, number thirty-four gauge, well-annealed, punch hole to receive the pin and force the gold down onto the neck of the crown. Here I use a large cork and soft-pine stick to finish swaging the gold to the crown. Force the pin down into the cork until the crown comes in contact with the gold. I cut a V shape in the pine stick and place the V over the end of the incisal edge of the crown, and with a small riveting-hammer gently tap the stick until the gold is thoroughly swaged over the gingival end of the crown. I can adapt a piece of gold more accurately with this method than with any other that I know of. Now remove the crown from the cork and trim the gold at the periphery, after which drop a small piece of sticky wax on the pin. Dry the cope, which is in position on the root, and when the parts are thoroughly dried, take the crown and slightly warm the pin and wax, forcing it into position, holding it firmly until the wax hardens. Now remove with care. The cope and tooth will come off together. After drying the cope, take a toothpick, at the middle of which stick warm wax. This lay across the labial portion just at the union of cope and crown.

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*Extract from article in Dental Review.

Now the case is ready for investment. For investing I use about two-thirds ground asbestos and one-third plaster. I invest high so the investment will not be weakened when the toothpick is withdrawn and the plaster shaped up for soldering. After the investment is hard, slightly warm the wax and withdraw the toothpick. Trim like the investment I show you. You can readily see how easy it would be to solder a case invested as this one is.

When the case is ready to solder, it is well to fit a piece of gold plate in between the cope and gold covering the end of the crown. This acts as a wedge and prevents the gold pulling away from the edge of the crown during the act of soldering. Solder with twenty carat solder. When perfectly cool, remove and finish in the usual way. There is no doubt in my mind whatever that a crown so constructed presents the most desirable of porcelain crowns. I will say, however, that like all other crowns, there are conditions where it would be unwise to use a banded Logan, such as a close or short bite, where one must sacrifice a goodly portion of porcelain, a banded Logan is not indicated.

Just one word of caution. In the Logan crown there is a large tapering post, the large end being baked in the porcelain. When heating up to fuse the solder, one must use precaution and heat the porcelain fully as hot or even hotter than the pin, in order to prevent uneven expansion and checking of the porcelain.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

To Clean the Dirt and Wax from Teeth Before Trying Them in.—Rub lightly with a soft rag moistened with methylated spirits.—*E. H. Lister, Items.*

A Word About Mixing Porcelain Body.—It is generally preferable to mix it with absolute alcohol. The alcohol evaporates quicker than water, and with less liability of bubbles or blow-holes; besides which, water may contain in solution something which may affect the color of the inlay.—*J. B. Ensmere, Cosmos.*

Sometimes Teeth Become Devitalized in the Entire Absence of Decay.—Recently a man presented with an exceedingly sensitive cuspid, which had been paining him severely for several hours. There was no decay of tooth, but there was some change in color, so we decided to devitalize the pulp. Immediately upon opening the chamber an exceedingly offensive odor came from it, although there was no discharge except a little vitiated pus. In a moment the pain was gone and the soreness abated, so the canal was thoroughly cleansed, treated antiseptically and temporarily filled. No trouble occurring after several days the tooth was permanently filled and has caused no disturbance since.—*J. Taft, in Dental Digest.*

Too Wide a Band a Cause of Failure in Crown Work.—One cause of failure to crown work is the want of judgment in using too wide a band. The excuse given for using a wide band is to prevent the root from splitting. I think this danger is overestimated. If the articulation has been properly devised and the posts properly fitted there is little danger of splitting the root, while the percentage of crown teeth that will feel comfortable after the peridental membrane has been injured are so few as to make this method of driving bands two or three mm. beyond the gum margin impracticable. I try to make my bands come just to the peridental membrane, and in cases where I have been successful in doing this I have never seen a recession of the gum.—*F. H. Orton, in Review.*

To Reproduce the Lingual Surface of a Tooth by Means of Thickening the Backing.—A satisfactory method is to cut a piece of 18 k. gold of No. 24 gauge to the desired height and bend it in a semi-circular form, so that the two ends when placed against the backing will give the same circumference as the adjoining natural tooth.

The semi-circular piece of gold should be cut to fit the irregularities of the plate, and will present a cup or pocket which, when filled with solder, will afford material sufficient to grind to the desired size, thus imitating the portion of the natural tooth which comes in contact with the tongue. The results will be infinitely more comfortable to the patient and much more readily kept free. —*N. S. Essig, Cosmos.*

THE TREATMENT OF ULCERATIVE STOMATITIS.—Kissel (*Progres medical*) rinses the child's mouth every hour with a three per cent. boric acid solution and rubs twice daily the entire buccal cavity, and particularly the gums and ulcerated parts of the mucous lining of the cheeks, with a plug of cotton wet with the same lotion. Cod-liver oil is prescribed, and before commencing treatment unsound teeth are extracted. Under this treatment ulcerations are said to disappear in from six to ten days. In private practice, when such minute attention is not possible, the author, after extracting the teeth as before, curettes the ulcerations to the bottom, then with a finger enveloped in gauze he rubs iodoform powder into the ulcerated surfaces. The buccal cavity is cleansed twice daily with a tampon of cotton wet with the same boric acid solution and the mouth is rinsed hourly with the same solution.

METHOD OF TAKING AN IMPRESSION AND BITE IN PLASTER WITHOUT CUP FOR CROWN AND BRIDGE WORK.—After adjusting the attachments to the roots, mix plaster a little thicker than for ordinary impression; take a smooth spatula and place the plaster around the attachments and spaces between the attachments and remaining teeth, if any, then have the patient close the mouth and bite into the plaster far enough to cover at least one-third the length of the occluding teeth. Pack the plaster on the labial surface with the finger and allow it to harden, then have the patient open the mouth and remove the impression. If it should fracture, stick it together with hard wax. Any attachment that should not come out with the impression can be removed from the roots and placed in its proper position in the impression, before running the model. If precaution be taken, this will be found to be a very accurate way of taking a correct impression and bite.—*J. W. Smith, Cosmos.*

HOW TO SLIT A CROWN, DRAW IT IN AND SOLDER WITH PURE GOLD.—You should not heat up the gold plate quickly or hotter than is necessary to just melt your solder. If your solder is not heated in proportion with the crown, the moment it melts it perforates the overheated gold, and that is the way a hole is melted in the crown. Put in a piece of 18 k. gold or even 14, and hold it over the flame of a Bunsen burner; heat it suddenly, and you will see the crown get to a pink shade with the solder still dark. The moment the solder does melt, the crown being hotter than the solder, it has such an affinity for the gold, the solder goes through the crown. When I put in pure gold and gradually heated it up you could see that both crown and solder were the same temperature, the pure gold melting at a slightly lower temperature than the crown, and, when it fused, flowed on the surface of the crown. The crown is made of 23 k. gold, slightly alloyed with platinum. Pure gold can therefore be melted on it. —*Geo. Evans, Cosmos.*

USEFUL HINTS.—It is sometimes imperative that teeth with sensitive necks and exposed roots be medicated and remedicated with silver nitrate before scalers can be properly used. Deep pyorrheal pockets are markedly benefited by this treatment and scalers are made tolerable. The gum should be protected in most cases by a preliminary application of tincture of iodine; if the nitrate of silver spreads, it will form a painless iodide. The severe pains caused by chloride of zinc are relieved by a solution of bicarbonate of soda. The action of nitrate of silver can likewise be moderated by this simple, harmless and inexpensive agent. Cotton wedges with a retaining wedge of gutta-percha or temporary stopping have probably superseded rubber wedges in the majority of offices. Fine silk tied around teeth will relieve the shock of malleting. The last medicament to be referred to is compound tincture of aconite and iodine, and mainly in advocacy of its routine application to the gums of teeth that have been covered by the rubber dam. This, followed by free rinsing with pretty hot water and a little more unguent applied to the oral commissures may serve in a measure to ameliorate that "used-up" feeling of the mouth which is a too frequent accompaniment of dental and oral manipulations.—*L. Van Orden, Western Journal.*

EDITOR'S NOTES.

CONVEX PRISMATIC SPECTACLES FOR DENTISTS.

A dentist's eyesight is his greatest possession, and yet many are careless regarding it. But, whether normal or defective, there are times when every dentist feels the need of assistance in the way of some good magnifier to inspect the teeth or mouth. Many dentists wear glasses for operative work only, but if they possess much magnifying power and the eyesight be normal, there results a straining of the eyes.

Some dentists use the ordinary magnifying lens and some the jewelers' eye-glass to assist in the making of fillings, etc., but these afford the use of one eye only, and eye-strain is apt to result.

In a recent issue of the *British Dental Journal*, Dr. W. B. Pearsall calls attention to a new kind of spectacles that seem to remove all objections to the use of magnifiers of various sorts, and are just as effective. They are referred to as Professor Landolt's convex prismatic spectacles. With them one can use both eyes, getting the stereoscopic effect desired, and leave the left hand free for use.

Of them Dr. Pearsall says: "I have been using spectacles of this type for several months in systematic examinations of teeth, and of newly-made dentures. There is a total absence of eye-strain, and the focal distance is a convenient one for a dentist to use. It is a very great help in the examination of spots or stains, many of which are active foci of disease, although they are minute or of relatively small diameter. The examination of the sulci in the crowns of teeth can be made with greater ease and certainty than with the ordinary convex lens, as well as the fit of inlays. I have asked my kind friend, Dr. Patrick Maxwell, one of the surgeons of the Royal Victoria Eye and Ear Hospital, to describe the optical nature of these lenses, so that, if other dentists wish to secure the aid of such invaluable spectacles, they can do so through the help of any competent oculist."

Regarding them Dr. Maxwell says: "A prism refracts light towards its base. If, therefore, a pair of prisms be held before each eye, with their bases towards the nose, light from a near object is rendered less divergent, and the convergence of the eye is in consequence diminished. By grinding a convex surface on each side of a pair of prisms, which are then placed in a spectacle frame with their bases towards the nose, an arrangement is obtained whereby an object can be brought very near the face and is seen comfortably, because accommodation and convergence are simultaneously relieved. For persons under forty-five years of age a lens of + 6.D, combined with a prism of 12° base in. for each eye, usually gives a working distance of from five to seven inches; but the glass for one or both eyes may have to be modified and even a cylinder introduced to suit the focus. Unless the vision is perfectly normal, an oculist should be consulted."

THE DENTIST'S SIGN.

The average dental graduate is always anxious to see his brand new sign hanging before an office of his own. Oh, the pride he feels when he glances at his name printed there in gold. 'Tis this, he thinks, that will guide the people to him; this sign alone.

No mistake could be far greater, for there are other signs that will gain him ten times more patronage than the office sign. His general appearance and manner are signs that have much to do with his obtaining patients. He must abstain from the use of rude or filthy language; he must be courteous, kind, sympathetic, and strictly observe personal cleanliness. External appearance reflects a man's character more than he is aware. It is his passport to the community in which he locates. The dentist who is neat in attire, considerate in manner, optimistic in his views, business-like in his methods, attentive to details, will build a practice far better than the man who holds these things in contempt as non-essentials in practice.

The majority of his patients will be women, and they are observers. Housekeepers will see dust or dirt with half an eye. Therefore a neat and orderly office is necessary. It should be kept clean and tidy, and however plain or inexpensive the furnishings, they should be selected with regard for propriety.

The dentist's office is influential in determining the character of his practice.

One cannot be too careful about cleansing his hands and instruments, for patients nowadays look for these things in a competent dentist. They look upon one who is careless in this regard as behind the times.

When you have obtained your patient, then prove your worth by your best skill. Never slight any operation, whether your pay be great or small; always do your best.

One who gives thought to these "little signs" will find his patronage increasing. The reputation of success is part of the success. In starting in practice, therefore, be sure that you make no mistake in the kind of signs you employ.

LEAVES FROM AN ABSENT-MINDED REPORTER'S NOTE-BOOK.

What are so many men doing here?

This is a dental convention.

Who was the person screaming so loud?

Oh, that was only a patient.

What was the matter with the patient?

Nothing; the dentist was only exhibiting his painless method of extracting teeth.

Was it a success?

A perfect success, according to the clinician. The patient was probably screaming out of pure delight in having her teeth extracted painlessly.

Who is the man over there shaking his fists and talking so loud?

Oh, that's only a debator, who declares that all dentists are liars and the biggest braggarts on earth.

Is he one?

Certainly not. He's the only saint in the lot.

Don't the others get mad at him?

Oh, no. They're used to such things, and don't believe half that these loud talkers say in dental conventions.

What river is that sketched on the blackboard?

That is not a river at all. It is only the tract of a fistula. A patient had a lower molar in which the pulp died. He neglected consulting a dentist until he noticed a running sore on the sole of his foot. This dentist diagnosed it as the opening of a fistula from the roots of the molar tooth. That fistula, he stated, was five and a half feet long.

Is that much for a fistula?

Yes, that is indeed much for a fistula, but not much for some dental societies.

NEW PUBLICATIONS.

GOULD'S POCKET MEDICAL DICTIONARY, by George M. Gould, A. M. M. D.: Published by P. Blakiston's Sons & Co., Philadelphia, 1900. Price, $1.00 net.

This is the fourth edition of this remarkable little book, revised and enlarged.

It seems almost incredible that so much can be gotten into such a small compass. The book is only six inches long, three and a half wide and three-fourths thick, yet it has 837 pages, contains definitions of over 30,000 words used in medicine and collateral sciences; also very complete tables of clinical eponymic terms, of arteries, muscles, nerves, bacteria and thermometric scales, and a dose-list of drugs and their preparations, in both English and metric systems of weights and measures. The small size of the book, its flexible leather covers, the vast amount of material contained and the small cost per copy makes the book a desirable one for everybody, and especially students. Over 100,000 copies of Gould's Dictionaries have been sold.

SOCIETY.

NATIONAL DENTAL ASSOCIATION.

Remember, the next meeting of the National Dental Association will be held at Old Point Comfort the latter part of June or fore part of July. It promises to be an extra good meeting. Make arrangements to attend. Further particulars next month.

MEETING OF THE OHIO STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Ohio Board will be held at the Chittenden Hotel, Columbus, O., beginning Tuesday, May 29th, 1900. Examination will be both theoretical and practical. Applicants are requested to bring instruments, rubber-dam, filling materials, etc., necessary for making fillings or doing such other work as may be required. Engines will be supplied by the Board.

For further particulars or application for examination write to

Dr. L. P. Bethel, Secretary,
Kent, O.

MICHIGAN STATE BOARD OF DENTAL EXAMINERS.

The next meeting will be held in Grand Rapids, May 8th, 1900. Applicants for examination must furnish material, instruments (including dental engine) and gold for one or more fillings, as the Board may direct.

F. O. Gilbert, Secretary,
Bay City, Mich.

VERMONT BOARD OF DENTAL EXAMINERS.

A meeting of the Vermont Board of Dental Examiners will be held at the Bardwell House, Rutland, May 23d, 1900, at 7:30 o'clock p. m., for the examination of candidates to practice dentistry. The examination will be in writing, and include anatomy, physiology, histology, bacteriology, chemistry, metallurgy, pathology, therapeutics, surgery, materia medica, anaesthesia, operative and prosthetic dentistry, together with an operation in the mouth. Candidates must come prepared with instruments, rubber-dam and gold.

Applications, together with the fee, ten dollars, must be filed with the Secretary on or before May 10th.

Geo. F. Cheney, Secretary,
St. Johnsbury, Vt.

THE

OHIO DENTAL JOURNAL.

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CONTRIBUTIONS.

PHYSICAL TRAINING FOR DENTISTS.

BY WM. H. KINNICUTT, M.D.,
Physical Director Y. M. C. A., Cleveland.

Civilization and specialization are responsible for many problems to which the evolution of society has not properly adjusted itself as yet; one of these is how to maintain health and physical efficiency under conditions which are contrary to the requirements of nature.

The endowment of mankind with a muscular structure which is adapted to a rigorous outdoor employment, has not yet worked out its relation to the conditions surrounding professional life. In this latter but a minimum of physical ability is required; and outside of a more or less constant standing, and the occasional obstreperous molar, the dentist's occupation involves, perhaps, as little physical demand as any of the professions.

Not only is injury done to the body and general health by the negative course, but the character of the chair work, with its necessary posture, conduces to curvature; and this is emphasized by the deterioration of the general muscular tone.

A man cannot maintain his business for any great length of time without some activity, which will crystalize in cold cash that which the laws of business demand as evidence of fitness to survive. So in the physical economy, nature demands a certain activity as the only means of maintaining the physical establishment; and she accepts as working capital nothing but physical exercise commensurate with the physical equipment.

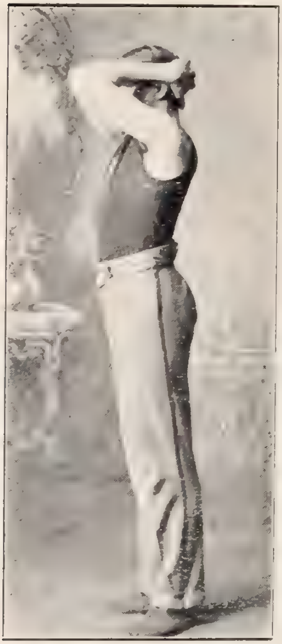

Fig. 1

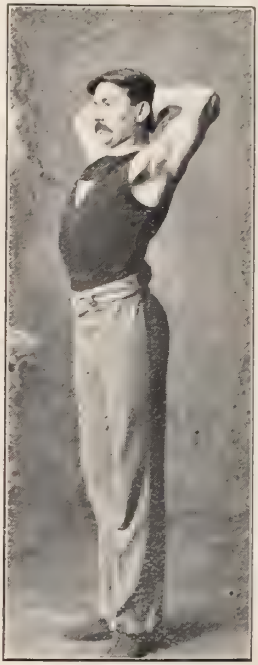

Fig. 2.

So a naturally strong man who ignores exercise will often go to seed, and poor seed at that, before the wiry man, who has not so great an encumbrance of physical responsibility.

In short, the man whose business requires no physical effort must preserve his tissue, his tone, his health, by artificial exercise.

Exercise, to hold the interest of those who approach it as a duty, must be brief, easy, definite and interesting; it must show its effects soon.

With reference to the many lines of business which make no demand upon the vital functions of a man, but do make irresistible demands upon his vitality, the following group of exercises is suggested.

Accompanying the illustrations are specific hints as to the use of the movements.

Those to whom exercise is new should do all these movements moderately; that is, with not too much vigor, until the muscles are "seasoned" a little. About ten of each movement is a good number for beginners. The breathing exercise (No. 6) may be used at any time that one feels "winded."

As the period of soreness wears off—usually in about four or five trials—add to the number of counts; or better yet repeat the entire list.

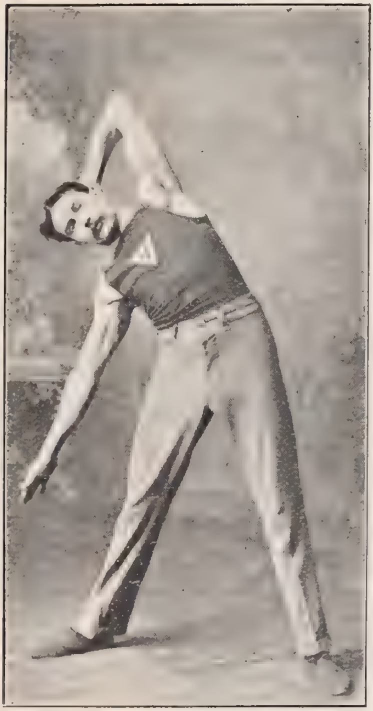

Fig. 3.

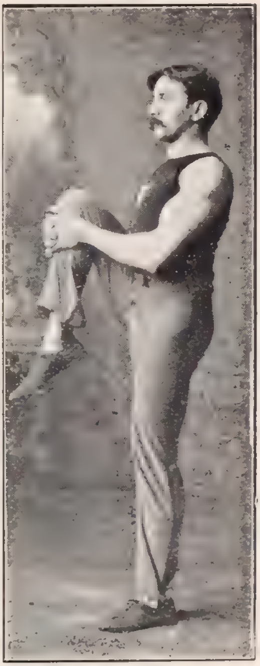

Fig. 4.

After exercising, rub the body briskly with cold water (the warmer the body is from the exercise the better) then rub dry with a coarse towel. Ten minutes spent in this way every morn-

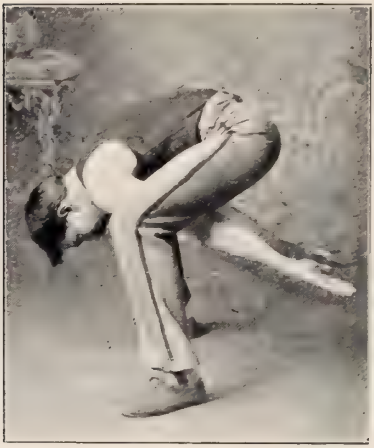

Fig. 5.

ing will abolish four-fifths of the common ailments of business and professional men and others who have no outdoor work.

It is the regularity of exercise that counts, just the same as

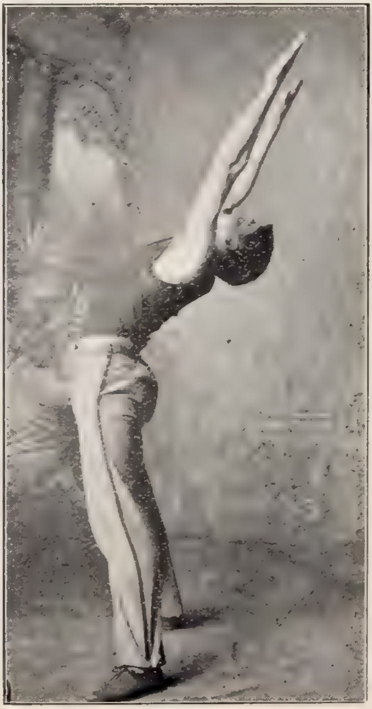

Fig. 6.

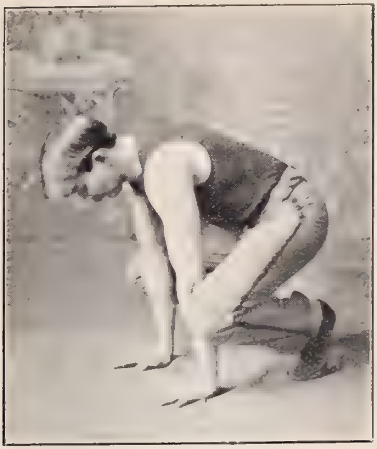

Fig. 7.

with meals; spasmodic exercising periods are about as good as an occasional dinner. These exercises are intended to be suggestive; they do not claim to be anything more than a simple series of movements which will stir up and improve the vital functions. They are offered for what they may prove, after honest trial, to be worth.

Upon arising from bed, put on some light underclothing (which will be changed after the exercise) and open a window as far as consistent with the weather, to insure fresh air.

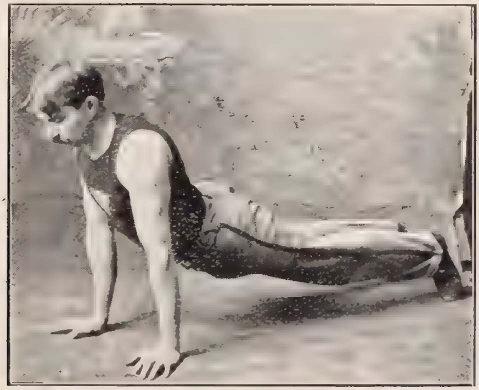

Fig. 8.

First Exercise—(Figs. 1 and 2). Standing elbows together; on count "one," open elbows vigorously; "two," close them lightly. (Keep hips well back, chest arching forward.)

Second Exercise—(Fig. 3). From last position, spread feet; bend straight to sides alternately, one arm reaching downward (on same side as bend), the other back of head.

Third Exercise—(Fig 4). Clasp knees to chest alternately, with plenty of vigor.

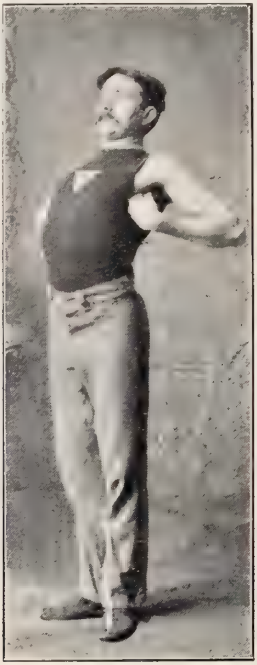

Fig. 9.

Fourth Exercise—(Figs. 5 and 6). Spread feet; swing arms between knees, away under, then away above head; alternate position rapidly.

Fifth Exercise—(Figs. 7 and 8). Rest weight upon hands and toes, arms between knees, spring feet to full extension. Alternate positions rapidly.

Sixth Exercise—(Fig. 9). Stand with arms at side; clench hands and curl them under armpits, while taking full, deep breaths; lift the shoulders well.

WHAT IS THE USE OF IT?

BY DR E. J. WAYE, SANDUSKY, O.

A Chicago dentist, writing to the editor of "Items of Interest," states that "for years he has been able to take plaster impressions of single teeth with very narrow necks which stood alone." His method is to wrap the neck of such tooth with floss silk, until the sides are parallel; over this he pours plaster. After making the mold he "carves the plaster down to an approximately accurate shape." By this process the plaster model must be "carved" as much or more as would be the case were the impression taken in simply beeswax, modeling compound, or plaster, which last if removed at the proper time would fracture sharply, and the pieces being accurately replaced would afford a perfect mold of the tooth. The cases in which this method would apply must, it would seem, be quite rare. The best authorities declare that clasps around such teeth should be quite narrow and only fit accurately around the tooth at its greatest circumferance near the top, and in any case a clasp which should fit perfectly the entire tooth could not be removed. The process can hardly be considered of great value. As the showman said of his boaconstrictor, when asked if he was called by that name because he bowed, he replied that while he could "bow out" if he chose, he didn't make a practice of doing it, for what's the use of it? And so of this method.

REGISTER—COMPARE.*

BY E. D. GARDINER, A.M., TOLEDO, O.

To the careful and progressive dentist the value of an accurately-kept register can hardly be overestimated, and by an accurately-kept register I mean to the extent of naming the conditions at the time the work is done, as well as the certain make of the material used in each individual piece of work. And also to the frequent use of foot-notes, for unless the gray matter in most of your brains is of a much finer texture than it is in mine, you will find it a very difficult task to look at a number of fillings to-day, or at a plate, that you put into a mouth one or two years ago, and be able to tell just whose material was used in each filling, or whose teeth in that plate, unless such facts were registered at the time the work was done. And if neglected I am at a loss to know how we can judge just what material in our hands is the best, for I make the statement that it is only by accurately recording our work that we can compare materials, and it is only by comparison that we are able to use the best that is at our command. And here let me say that I think it takes nothing short of a genius to get fully acquainted with a multiplicity of instruments and materials. In answer to the statement of a dentist that he was the possessor of ten or twelve sets of pluggers, I once heard a practitioner of excellent and deserved reputation say that he possessed not more than thirty-five or forty pluggers, and after a practice of twenty odd years he didn't feel that he knew more than a half dozen of those any too well, to say nothing of getting acquainted with two or three hundred. And so, too, with materials; they are not always uniform, and a different treatment of the same material will usually produce a different result. And, on the theory that scattering one's energies is weakening in effect, I hold that I can serve my patients best by confining myself, as, for instance, with amalgam, to the use of two or three acknowledged good ones and then to know those thoroughly, than to shift with every dental agent that may come into my office with something new to offer. If asked here if I did not think that such a mode of practice would not retard our advance in the way of perfecting materials, I would answer, not necessarily, for all dentists are not built upon the lines of the writer and we have in our ranks a good many men—God bless them!—who are experimenters. They love it; it's their meat and their drink, and if perchance they bring forth something with true merit, I begrudge them not a bit of the profit, and I vouchsafe for their product a welcome reception by an alert and progressive profession. For the purpose of comparing and discussing this evening let me go to my register and ask a few of the living and some of the dead to speak for themselves! And almost at the first page let us stop and drop a sympathetic tear for celluloid—for it was not really that we loved her more but Josiah less, that first induced us to woo her fickle charms, but she served a purpose, and whether upon the whole it was good that we were introduced, I am not quite prepared to say. Truth, however, compels me to record that she was not wholly bad, for within a year I have been called upon by a patient wearing a celluloid plate in an excellent state of preservation that I had made for her more than seventeen years before, and she had driven over many a long stony mile expecting me to replace a recently broken tooth for nothing. But looking at my register and noting the date upon which I put that plate into her mouth and that I had used "S. S. W. teeth, mold 41, shade 11," the lady was told that I drew the line at seventeen years upon that particular mold and that I never warranted shade eleven longer than sixteen years!

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*Read before the Toledo Dental Society.

To the copper amalgam indictment my register forces me to plead guilty—with extenuating circumstances. But here again truth compels me to record that I have found it not without some merit, under certain circumstances. But long ago I discarded its use, in that I was not able to do with that what I could do with the plastics and gutta-percha, and to this latter material I bow with all the respect due from an intimate acquaintance of twenty-five years, during which time I have seen it grow from childhood to manhood and demand to be reckoned among the "flower of the family," and knowing that it is always morning somewhere upon the earth, I always feel that I can see one ray of light with gutta-percha when all other materials leave me in the dark. And why do I use less tin and gold in combination than I used to? I cannot tell. Certainly, I have no apologies to offer for the much or little that I have done along that line, for my registers show me that so far as I have been able to watch such work, that the ends have justified the means, and that the two metals in combination furnish one of the best means for preserving teeth known to dentistry.

For discussion I suggest the following questions:

Question 1. In so far as dentistry is concerned, is celluloid among the living or the dead?

Question 2. Is it not beneath our dignity as a profession to use the word "warrant" in a commercial way?

Question 3. In cavities so situated as not to be subjected to serve use in mastication, is gutta-percha as permanent a filling material as amalgam?

Question 4. Are tin and gold in combination superior to gold alone for preserving teeth?

CONSERVATIVE AND RADICAL PULP TREATMENT.*

BY W. H. GENSLEY, D.D.S., CINCINNATI, OHIO.

Which of the above methods to pursue, is one of the perplexing things that frequently confronts the dental practitioner.

When a patient presents himself for treatment with a carious tooth which has caused more or less discomfort, but where there is no exposure of the pulp, and apparently a sufficiently protective layer of dentin over it, one is sometimes perplexed whether to try to save that pulp by capping it, or to at once devitalize and run no chance of its giving the patient any further trouble.

Viewed from a conservative standpoint, if it is believed there is any possibility whatever of restoring it to a perfectly healthy condition, it is the dentist's duty to treat and try to conserve it; for, according to conservative ethics, we should make an effort to save pulps as well as teeth. On the other hand, are we justified in subjecting the patient to the risk of a violent case of pulpitis at some future time?

The patient, no doubt, feels grateful at the time, when it is explained what trouble has been taken, and how nicely that "nerve" has been saved. But all this is quickly forgotten, and the effort unappreciated, if that same "nerve" ever begins to manifest itself in an unpleasant way.

The possibility of pulpitis, however, is by no means the only argument against conservative pulp treatment, for in this case the filling can be removed, the pulp devitalized, and the tooth be made comfortable in a short time. Frequently, however, a capped pulp will go along tranquilly for some time, die a natural death, and give no indication that anything is wrong until this septic matter has infected the apical tissues, and a severe case of pericementitis or an alveolar abscess is the result. This condition is far more likely to happen with a tooth where the pulp has been allowed to die and the contents of the chamber and canals permitted to remain there until they become putrescent, than where immediate devitalization has been resorted to and the tooth thoroughly filled from the root up.

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*Read before the Cincinnati Academy of Dentistry.

Only the superficial layers of softened dentin are said to be filled with bacterial forms. The deeper layers of the softened dentin are not infected, and in a layer of such dentin, if rendered perfectly aseptic, there will be no recurrence of decay. It is even maintained that such softened but non-infected dentin will reconstruct itself.

Now, if we could at all times tell just exactly how far this dentin had become invaded by microbes, remove just that much and be absolutely certain that it has all been removed, render the cavity perfectly aseptic, and, if necessary, protect the pulp from external pressure by capping it, success might reasonably be predicted. Unfortunately, we are not readily able to determine how far infection has permeated this softened dentin, and sterilization is sometimes incomplete, even after our best efforts.

Where exposure has been accidental, and only slight, with no indciation of previous trouble, pulp capping, properly performed, will no doubt be successful in nearly all cases.

If there is any indication, however, that the pulp has previously given trouble, I believe, in justice to our patients and ourselves, we should immediately devitalize and properly fill the tooth. If we do not, the chances are that the patient will sooner or later develop a case of pulpitis, or the pulp will die, become putrescent, infiltrate the tooth structure, causing discoloration, and finally result in alveolar abscess, after which the possibilities of permanently saving that tooth are greatly diminished.

DISCUSSION.

Dr. Kumler: If the tooth has given enough trouble to lead us to suppose that the blood supply is too much, then I believe in devitalizing immediately, but if there is any possible chance of saving the nerve I believe in doing that. When it comes to devitalizing the tooth, we do not know with any degree of certainty when we have the nerve canal filled, and we are just as bad off it there is 1-64 inch of the canal unfilled as though we did not fill it at all.

There is a comparatively new remedy called the Iodo Formagen Cement, which I have used to some extent, and it apparently has given satisfaction, but, like all new medicaments, a thing ought to go two or three years before we can decide intelligently as to its results.

Perhaps just here it would be proper to say there is another little remedy I have tried, and possibly the rest of us have also tried it—a mummifying paste. I have made a paste of glycerol, thymol, dessicated alum and oxide of zinc, each 1 drachm, with the exception of the oxide of zinc (q. s. ad. thick paste). It seems to me in placing this over an exposed pulp that it does what it signifies. It is not an original preparation of mine, but is taken from the magazines. I have used it over pulps that were almost exposed, and it seems to give satisfaction. In my own practice if there is any reasonable doubt that the capping of the pulp is not going to be satisfactory, I think it proper to devitalize.

Dr. W. T. McLean: I do not believe in the mummification of pulps. I believe if the pulp is so nearly exposed as would be necessary for this process, that it should be devitalized and removed.

The paper stated that it was possible to save pulps when exposed, or nearly exposed. I have experimented with vigorous patients, of good nourishment and middle age, and three, I think, out of probably a dozen treated returned with alveolar abscess, showing the pulps had died under as careful treatment as I could administer. The recognition on the part of dentists, as a rule, with reference to nearly exposed pulps, is somewhat doubtful. It is difficult to recognize whether the pulp is either hypertrophied or congested, because of the carious structure present.

The doctor mentioned something about a pulp-capping. This has been a fad of mine. I think I am fairly successful, provided the pulp has not bled and the patient has not suffered acute toothache or pain. But where hemorrhage has occurred, or otherwise, the prognosis for the retention of the pulp is very slight.

Dr. Raugh: Personally I am a firm believer in the conservative treatment of pulps. I have been using a pulp-capping which is not at all new; it has been used for many years—Dr. Flagg's formula—calcined oxide of zinc mixed with the oil of cloves, or cinnamon or carbolic acid. I clean the cavity as much as possible, and as a rule leave no decay, if possible to remove it. I fill the entire cavity with this pulp capping. In most cases this filling will last several months. I have seen it remain as long as six months. Of course, however, I would not advocate the use of that as a filling material. When the patient returns I do not take all of this capping material out, but just grind the cavity to shape and fill over this, if the tooth has not given trouble in the meantime.

I agree with Dr. McLean. If the pulp has bled there is no hope at all. I would not attempt to cap in any case under those circumstances.

Dr. Bruchie: Dr. Gensley's remarks with reference to capping a pulp where there is a slight hemorrhage reminds me of two and a half or three years ago in the case of a superior bicuspid. In preparing the cavity I ran into the pulp and there was just a little hemorrhage. I did not know just what to do with the case, but thought I would take the risk. I put on the exposure of the nerve a little of the tincture of calendula to prevent, if possible, any subsequent inflammation; placed gutta-percha over that, then cement, then probably amalgam. I saw the case the other day again, and learned the patient had experienced no trouble since my treatment as above. Here, then, was a case where there had been hemorrhage, and I capped the pulp in that way. I never had had any experience in capping pulps up to that time. I had no fixed formula, but this simply suggested itself to me, and it was a success in that case. I do not look for any future trouble in the case cited.

IS A PROFESSIONAL DENTIST JUSTIFIED IN TESTIFYING IN BEHALF OF A QUACK?

Editor Ohio Dental Journal:

Is a member of the regular dental profession, who is in good standing in the societies, justified in testifying in cases of a malpractice suit in behalf of a rank advertiser?

I shall be pleased to have a prompt and brief answer to this question in the next issue of your journal.

Very truly yours,

Pittsburgh, Pa. S. L. McCurdy, M. D.

REPLIES.

Dr. W. C. Barrett, Buffalo:—I suppose that if any member of the dental profession, whether regular or irregular, is duly subpoenaed in a mal-practice suit, he will have no choice, but must attend and give his testimony. It is not a question of justification or non-justification. It is simply a question of obedience to the law.

If, however, your question embraces the volunteering of one's services in mal-practice suits, that is another affair. A "rank advertiser" is not entitled to any professional consideration. If I were summoned either by him or by his opponent I should do my best to tell the truth as I apprehended it, but I should do it as I would do it for any other fellow being. I should volunteer nothing. I should not make any undue exertion to assist him any more than I would in his prosecution. I should give him no professional recognition whatever, but to assume that because he was an "advertiser" he is not entitled to the consideration due any other of my fellowmen is more than I should be willing to admit.

Dr. Louis Jack, Philadelphia:—In answer to this question I would give an unequivocal No! unless under appointment by the court to give expert testimony.

Dr. B. Holly Smith, Baltimore:—Because a man is a dentist or professional man, that does not of necessity deprive him of his American characteristic, viz: Fondness for a scrap. If called on for testimony he should tell the truth; and if that finds him on the side of the quack, he is not to blame. I can see no reason why a dentist, like a physician, should not give expert testimony. If a member in good standing has any association with a quack, it should be to the improvement of the latter, and possibly might lead to the correction of the error of his way. If this cannot be hoped for, "come out from among them and be ye separate."

TRANSLATIONS FROM FOREIGN EXCHANGES.

CONDUCTED BY H. PRINZ, D. D. S

(Translated expressly for OHIO DENTAL JOURNAL.)

CHLOROFORM AS A STYPTIC.—According to the *Journal de Medecine de Paris*, Dr. Spaak, of Brussels, has obtained excellent results from a mixture of two parts of chloroform with one hundred parts of water. This mixture is said to rapidly arrest hemorrhage after tooth extraction.

PILCARPIN IN THE TREATMENT OF RANULA.—Safrantini states that he has successfully employed pilocarpin hypodermically in the treatment of ranula. With the view of forcibly distending the cyst with saliva and thus driving out the obstruction in the duct he administered one-sixth of a grain of pilocarpin hypodermically to patient having a ranula of considerable dimensions. This was followed by a slight reduction in the size of the swelling; a second injection, however, effected a cure, the obstruction being completely removed.—*Journal de Medicine de Paris.*

FOR NEURALGIA.—

R.	Menthol,	
	Guaiacol, of each	1 dram.
	Absolute Alcohol	10 drams.

Apply twice a day on cotton.—*Therap. Monats.*

PRECOCIOUS DENTITION.—Jouvosky (*Rev. Mens. d. Mal. de l'Enf.*) records the case of a new-born infant who showed at birth two well-developed lower central incisor teeth. The mother was healthy and gave no family history of congenital teeth. This was her second child, and it is noteworthy that her first infant, who showed no signs of precocious dentition, was by another husband. In weight the infant was above the normal, and the length was 50 cm. The teeth were normal in appearance, save that one was inserted somewhat transversely in the jaw. There was no local alteration in the surrounding gum. On the fourth day of life the teeth began to trouble the mother in lactation. The examination of the infant's mouth showed ulcerations under the tongue, and swelling and redness of the gum. An abscess began to form, consequently the teeth were extracted. It required a distinct effort to remove them from their sockets; they were typical milk incisors of a white (not a yellow) color.

XEROFORM (TRIRROMO PHYNOL-BISMUTH).—Dr. M. Kaiser again draws attention to the advantages of xeroform over iodoform, on account of its being non-poisonous, free from odor and cheap. Excellent results have been obtained by the author in sixty surgical and dermatological cases, very small quantities of xeroform producing the same healing effects as very much larger doses of iodoform.—*Therap. Monats.*

HEMOSTATIC ANESTHETIC SOLUTION.—A solution which combines the hemostatic properties of gelatin with the anesthetic action of cocaine and eucaine is prepared by A. Legrand as follows: Pure gelatin, 2 gm.; pure sodium chloride, 70 centigrammes; eucain, B hydrochlorid, 70 centigrammes; cocaine hydrochlorid, 30 centigrammes; pure phenol, 10 centigrammes; distilled water to produce 100 C.c. The preparation is poured while warm into sterilized tubes; when cold it sets to a jelly, which liquifies again at 20° to 25° C., and may in this state be used for injection. It has been found to give excellent results in dental practice, producing good anesthesia and preventing hemorrhage. —*Nouv. Rem.*

GREEN GUTTA-PERCHA is now produced from the leaves of the caoutchouc tree, and is said not only to possess all the advantages of the article obtained by incision into the stem, but even to excel it in durability, so that it can enter into use industrially and commercially in a hitherto unknown way.

SCHWEINFURTH, by the way, is said to have discovered in Central Africa a tree, called "tsofar" by the natives, from which also exudes a gum already introduced in commerce. This tree possesses the remarkable quality of giving off flute-like sounds when the wind blows through its branches. These are caused by an insect penetrating into the wood, in order to obtain the gummous substance, thus transforming the tree into a huge Pan flute. —*Technische Berichte.*

FOR FACIAL NEURALGIA.—The *Progres Medical* attributes the following to Bocquillon-Limousin:

R.	Butylchloral hydrate	150 grains.
	Alcohol	150 grains.
	Glycerin	300 grains.
	Distilled water	1,800 grains.

M.

One or two teaspoonsful daily.

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

THE BOER AND HIS DENTIST.*

A correspondent who has lived many years in South Africa, sends us the following:

The Boer is a constant sufferer from two ills—these are indigestion and toothache, and the one is the outcome of the other. He endures the indigestion with comparative cheerfulness; his father and mother had it before him, and why should he not have it also? But when the toothache arrives and gets in its fine work, his philosophy vanishes, and he incontinently caves in; and this is where the "traveling dentist" comes in. It is a peculiarity of the Transvaal that most professions and trades have their exponents who travel from one end of the country to the other offering their services to all who may require them, and in this category the dentist takes a prominent part. The men who follow this calling embrace in their ranks representatives of all classes of industry; many of them have at times served in Her Majesty's forces—none of them have any right to ally themselves with the profession; but the Boer asks no questions, and so this little discrepancy does not matter. These men travel round the country districts, as a rule mounted on some ill-fed, weedy horse. Their stock-in-trade consists of some pairs of forceps, a stock of remedies, and an abnormal amount of what our American cousins denominate "push." They travel from farm to farm until their services are required. When a Boer gets the toothache everyone in the neighborhood knows of it. The news is generally carried round by the Kaffir or Hottentot servants who have sought safety in flight, for on such occasions the Boer invariably relieves his feelings by knocking smoke out of everything black that comes within his reach. The dentist will be told that Oom Jantze, who lives behind the little red kopje, has got a toothache and his Kaffirs have run away. On the receipt of this news the professor of the healing art will inquire the way, and set off post haste to relieve the afflicted one. On his arrival at the farm he is welcomed by the rest of the family, and terms are arranged. This will take some time because there are no standing fees, and each side would endeavor to get the best of the bargain. The victim himself will often join in the discussion and try to lower the price by saying, "It's a small one, and the pain is getting better. Perhaps I need not have it taken out." This talk, however, is always recognized as mere padding by the dentist and little notice is taken of it. After the bargain is struck the operator extracts the tooth (some of these men are fairly skilful), and the money will be paid over. The dentist's work is not over, however, when he has pulled out the offending molar and handed it to the sufferer. He now unpacks his wallet and produces his stock of remedies, and dilates on the fearfully infectious nature of toothache. "You will all have it," he will cheerfully remark, "everyone of you. You (pointing to the vrow) will be lying in that chair shrieking with pain before this day week. You (turning to the daughter) will have your face swollen to the size of a rotten pumpkin in three days' time unless you take something to drive it away;" and then he will produce the one infallible remedy, and as a rule prevails on every adult member of the family to lay in a supply. If the day is still young the dentist will continue his journey; if it is verging towards evening he remains at the farm for the night, a hospitality which is always freely accorded. One advantage of this migratory life is that a man can live free of cost, because the Boer will not accept pay for entertaining a traveler. He will, however, charge for any supplies the horse receives, and this accounts for the usual well-fed condition of the man, and the air of starvation which invariably hangs over his steed. Some of these men have regular beats which they visit from time to time and where they are well known. They are a jovial, happy-go-lucky crew. They make money easily at times and spend it equally freely. When "things are bad," they philosophically incline to the old saying that the sun cannot shine every day, and hope for better luck on the morrow. There is not much doing in this particular line to-day, but they will turn up smiling again when the war is over.

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*Dental Record.

A SHORT-CUT METHOD OF MAKING A GOLD CROWN.*

BY E. J. PERRY, D.D.S., CHICAGO, ILL.

A method of making a perfect gold crown is to fit a narrow band, take an articulation in modeling compound, mount on crown articulator and fill into the band mouldine and carve your tooth and cusps in mouldine. All the lines, grooves and fissures can here be produced in mouldine, and only that portion of the band which fits the root is exposed in your model. The making of the split die in fusible metal is but a small matter. A brass ring, with a larger diameter at one end and two grooves opposite each other on its inner surface is needed. Fit a card into this groove. Now cut out the card so that you can set it down over your model without touching it, then pour in your fusible metal. Your die when knocked out of the ring will easily break on a line of the cardboard; take out your crown model; place die back into ring; now your cartridge of 22k .30 gauge gold is placed into the die and with sand or shot swaged to place. Trim off edge of crown to the line made in the moulding composing the stem of your model; polish, etc. If your original band fits, your crown will, and you will have produced by a short route a perfect crown. If you desire to thicken the cusps, to be absolutely safe place the crown in position, let patient bite, taking the precaution to anneal the crown first. If not just right, the opposing teeth will slightly indent the annealed crown. Then remove flux and fuse in some solder. I like this way very much of producing gold crowns, and I think it marks a distinct advance in this line of work."

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*Extract from article in Dental Review.

ASBESTOS AS AN INVESTMENT.*

BY N. H. KEYSER, D. D. S., GERMANTOWN, PA.

For some time past asbestos has been used, alone or in connection with other ingredients, as an investment, either as a protection to porcelain teeth or to hold work in position during soldering. Both the asbestos powder and the so-called woolly asbestos have been used with plaster of Paris, to reduce shrinkage; the woolly with the idea that its fibres would assist to hold the plaster together when it shrinks and cracks on exposure to intense heat. The powdered asbestos is added to the plaster in place of sand, to produce a light porous investment. The most serious objection to its use is that it retains the moisture long after the plaster has set sufficiently to handle and expose to the heat. Investments that contain plaster are better without asbestos.

When time is no object, very good investments can be made by adding to the plaster such materials as bar-sand, silex, marble-dust or pumice-stone. To prevent shrinkage, the proportion of all these ingredients should be greater than the plaster. The best results are obtained with materials that control shrinkage, make the investment porous, and yet permit the use of sufficient plaster to hold the investment together after it is heated. Investments that will set quickly without shrinkage have been sought for. Several are now on the market, which permit of being heated up before the moisture is entirely dried out; among these are "Sump" and "Fryite." A mixture having almost the same properties as these can be made by the following formula:

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*Extract from article in Dental Brief.

Potter's clay	4 parts.
Plaster	3 parts.
Mica	1 part.

An investment, which stands a high heat without change of form, has been suggested by R. L. Zellers:

Pulv. soapstone	1 part.
Plumbago	3 parts.
Asbestos, grade 3	5 parts.
Plaster of Paris	7 parts.

Mix thoroughly and sieve.

Asbestos, by itself, makes an excellent investment. That known as woolly asbestos, or the powdered, when mixed with water or alcohol, may be quickly molded as required, and the heat can be at once applied. It holds its form thus used, hardening as the heat is applied, and with a little care replaces fully in many operations the plaster investment, with the advantage of cleanliness and saving of time.

In using this investment it is best to first apply the heat slowly, so as not to disarrange the mass by the too rapid expansion of the contained moisture. Small pieces, such as a tooth upon which we desire to solder a backing, and many of the parts of a crown and bridge denture, may be expeditiously invested by binding around them No. 1 carded asbestos with No. 6 iron wire. The iron wire may be so arranged as to form a handle by which to hold the work. In this way a tooth can be safely soldered over a Bunsen burner or a spirit lamp without the necessity for waiting for the investment to harden or for any previous heating-up. If there is not sufficient heat to melt the solder when held in the

Bunsen burner, a blow-pipe can be used after the object is thoroughly heated.

In all plate work the teeth thus invested can be individually soldered, and finished before final investment. The investment for holding the teeth to the plate is best made of plaster of Paris and good sharp sand. Wildman's formula is: Sand 5 parts, plaster 4 parts.

By following out the method above suggested, all the pins can be soldered, and the backings smoothed and finished conveniently and thoroughly, and the final soldering to the plate be very much simplified. The plan also facilitates finishing, and gives the plate a far more perfect appearance, with less labor, than by any other method. By this simple investment gold fillings are easily fused in artificial teeth, all the work being done in the open flame of a Bunsen burner quite as well as with the more expensive furnaces.

A STERILIZING APPARATUS.*

BY THOS. C. STELLWAGEN, M. D., D. D. S., PHILADELPHIA, PA.

To enable the operator to asepticise his instruments conveniently and to have them at his command and ready for use they may be stacked like muskets, in appropriate metal racks. Any dentist can solder upon a wire rod two horizontal disks of copper or proper material about three inches in diameter. For the lower or base swage or spin upon a mould or cast in lead, forming it in the shape of a saucer or shallow circular pan with a rim raised one-fourth of an inch. This pan should then have seventeen or eighteen slight depressions just inside the rim, made to fit the butt ends of the instruments, and the lowest part of each of these may have a hole through the plate to facilitate the drainage. The upper disk is pierced near to the circumference by a similar number of holes of appropriate size to permit the instruments to be passed through freely and yet hold them sufficiently steady. These disks are placed at a convenient distance about three and one-fourth inches apart upon the rod, which is passed through and fastened to the center of each like an axle of a pair of car wheels or an egg boiler. The upper end of the rod may be five inches high and terminate in a hook by which the rack may be lifted out of the hot solution and hung upon a bracket or a horizontal hoop or ring. Several of these racks may be used upon the ordinary dental device that can be raised or lowered and turned to the right or left, or the hoop may be hung up by a cord over a pulley overhead and a counterbalance weight.

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*From an article in The Stomatologist.

For forceps a ring may be used instead of the upper disk, and for table knives, forks, spoons, etc., the disks may be slotted to slip the articles into them to enable the blades only to be dipped into the hot water. If ivory or wooden handles are used the depth of the water can be arranged so that it will not impair or bathe them.

Generally for metal-handled instruments the points are stood up, but a piece of soft lead or blotting paper or felt or rubber may be put into the lower pan, or this may be made of lead and give greater stability to the stack.

In fact, very trifling ingenuity would be required to modify this device for a number of uses.

Finally the polished nickel-plated apparatus, complete, with the glass jar and bracket to hold nine dozen excavators or pluggers or similar instruments, scalpels, etc., will cost but a trifle, perhaps 50 cents for such a rack.

Should it be deemed desirable, the instruments may be treated by such solutions as may be preferred as microbicides, and then after being stacked in the racks they may be boiled for a few minutes in an alkaline solution, taken out and hung up or stood in any appropriate place to drain and dry off quickly. After this several racks with the instruments placed in them may be stood in groups and covered with a bell glass or placed in a sterilized glass covered jar, to keep them free from any dust or infection. The jar may have several layers of blotting paper cut to fit the bottom and these may be saturated with an effective germicide.

There is made at a manufacturing establishment (I think in Rochester, N. Y.) a nickel-plated copper cylindrical vessel called an inset for a teakettle. This vessel costs 50 cents, is six and one-half inches high and five inches in diameter. It can be filled with water, to which may be added as much carbonate of potassa or soda as can be put upon a ten-cent piece, and the solution, kept boiling over an electric stove or by any convenient means, may be constantly ready for use.

TO MAKE AN ACCURATE-FITTING PIN AND ROOT SEAL.*

BY A. W. WIMMER, CHICAGO, ILL.

Taking for example a root so badly decayed as to leave only a thin edge with enlarged canal, I proceed as follows: The root is supposed to be aseptic and the apical end filled. The edge is ground as smoothly as possible, especially under the gums of the labial portion. The canal is reamed smooth and tapering. A Logan crown is then ground so that it will touch only in front, and the length and occlusion noted. With a sharp knife the pin is barbed and warmed so that a quantity of wax—enough to fill the root and joint between—will stick to it, and then placed in the root and forced to position. Remove, trim, and reinsert until crown touches in front with no wax between this portion of the joint. Take an iron ring, about one-half inch deep, with a flat bottom. Fill this with stiff plaster and push the crown pin end down until it touches the bottom, letting the plaster extend upward a little above the wax. Warm and remove. If the wax does not come away, don't scrape it out, as the impression may be scratched, causing projections which will prevent the crown from going to place. Melt out the wax, set the impression over a burner, and fill with some low-fusing metal. When it melts warm the crown; push it down until the surplus metal comes out around the tooth. Finish and try it in the root. If it fails to go to place, take a piece of wood and coat with vermilion, touching all parts ot the canal and end of the root. The spots will show where to scrape off. Cut grooves (not barbs) around the pin, set with cement or gutta-percha. You now have the crown with a pin bearing the whole length of root, with a perfectly tight joint. To construct the crown so as to be able to replace in case of fracture, use a Bonwill or Davis crown. Keep a record of the size and shape, so that if necessity arises the new crown may be simply cemented to place.

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*From article in Cosmos.

For bicuspids or teeth having more than one root, also for separated roots, ream the canals parallel; insert pins that fit snugly, letting them extend three-sixteenths of an inch above roots. Build wax around them; push a gold or hollow crown over the wax; remove and trim. Place the wax with pins in plaster; remove the wax; fill with metal, uniting the pins with metal stump; cement to the root, and crown over the metal.

Touch the pins with zinc chlorid solution to unite the metal.

REPORT OF AN ACCIDENT IN PRACTICE.*

BY SYDNEY STOKES, LONDON, ENG.

I mention a little accident which I thought might prove interesting to some gentlemen who do not mind hearing confessions. It might warn them not to be so careless as I was. One morning I got three molars in a row, as shown on this blackboard, and the trouble was in the lower second right molar, which was very much broken down on the distal side, down below the cervical margin. There were also other teeth to be removed in the upper jaw, and the patient was to have gas. Of course I began from behind the chair, and did not take the trouble, as I ought to have done, to press with the thumb upon the third molar to steady it. The result was that, in my anxiety to get this second one out so as to go round to the front of the chair and extract the teeth in the upper jaw, I hurried matters. To my surprise, though I got a good penetration with the forceps, it did not come away as easily as I thought it should do, and without stopping very much I used a little more violence and it came out, and I put it down in the forceps. Then I went round to the front of the chair and did the other operations, sent the patient to wash the mouth out, and saw the next case. On being questioned later, the first patient said he felt very comfortable, "but how about the other loose tooth?" I had no idea there was another loose tooth, but on examining his mouth I found the anterior root of the wisdom tooth was then occupying the posterior socket of the second lower molar. The explanation was quite plain The third molar was not very fully erupted, but the root of the tooth was quite complete. It had travelled somewhat forward and slightly encroached upon the distal cavity in the second lower molar, and when I put on the extra amount of force to get rid of the second molar, I lifted *this* part of the crown up which was occupying the posterior cavity. I ought to have taken care to put some pressure upon that third molar to keep it in its place, but I did not stop to do so in my anxiety to get to the others. It illustrates the tendency to try and do too much under gas. The question was, What was to be done? I suppose some of us have seen teeth replaced into the socket after extraction by mistake, with varying results. Sometimes they settled down and behave all right; at other times, the reverse. I took an ordinary straight elevator and gently pried the anterior root of the wisdom from the socket of the posterior root of the second molar. I lifted it over the septum until the tooth got to its proper place, and then gave it a push down and sent the patient away. There was some little tenderness, and the tissues were a little congested and infiltrated for two or three days, but afterwards the tooth settled down. So far as I know—and I should know if it were different—the tooth is quite comfortable and the patient is able to use it in mastication. I perhaps ought not to have troubled you with the case, but it was an interesting little accident which had never occurred to me before, and which I do not want to occur again.

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*From report in The Dentist.

ROOT FILLING.

BY DR. J. M. FOGG, PHILADELPHIA, PA.

After an experience with almost every root-canal filling known to the dental profession, I have adopted, for the majority of cases, the use of balsamo del deserto, which is introduced into the canal by means of an electrically-heated copper point, fine enough to penetrate wherever a very fine broach can be used. After a canal has been sterilized and dried by ordinary methods the heated copper wire is introduced until a slight sensation of heat is perceptible to the patient. The balsamo del deserto is then conveyed to the cavity upon a suitable instrument, and pumped into the canals with the copper point, the heat softening it so that it flows readily to all points. The excess is removed by wiping the cavity with cotton saturated with chloroform and the mouths of the canals covered with gutta-percha, over which is placed phosphate-cement, and the cavity is ready for filling.

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*Extract from article in Dental Brief.

The following advantages are claimed for this method: The drying and sterilizing effect of heat in the canal; the antiseptic qualities of the balsamo and its ability to perfectly fill the canal and penetrate the tubuli; and, finally, that in case of necessity it is easily removed.

USES OF TURPENTINE IN DENTISTRY.

BY R. H. CLARK, D. D. S., NORTHAMPTON, MASS.

In germicidal properties it ranks second to bichloride of mercury, and is preferable because of its harmless nature. It prevents fermentation, and in the arts is invaluable on account of its great preserving properties. In dental therapy we find use in the following pathological condition: It counteracts the after-pain of tooth extraction. It is valuable as a root-canal dressing, the penetrating properties of the oil being carried throughout the canals of roots, even to the apices, thoroughly antisepticizing and rendering, finally, by its irritating nature the incipient abscess (if one) as nil. In periostitic troubles it is no doubt without a parallel. By its counter-irritating properties that acute inflamed condition becomes quieted, and smiles of appreciation illumine the faces of our patients.

In cases like the above its action is peculiar according to the

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*Extract from article in International Dental Journal.

vitality of the patient. Sometimes it acts as a resolvent; again, it hastens (or seems to) ulceration.

In leucoplakia, in scurvy, or those turbulent conditions evolving hypertrophy of the gums, it acts quickly, quietly and very effectively.

In mercurial stomatitis it has no superior. Let me emphasize its use to this pathological condition. In at least half a dozen cases in my practice it has never failed as yet to perform that for which it is intended. In operations for necrosis it acts to relieve that condition of intense pain.

It is an antidote for phosphorus, preventing the formation of phosphoric acid, and converts the substance into an insoluble spermaceti-like substance. Thus it is indicated in the phosphoric necrotic condition in mouths of those working in match factories.

In all cases it tends to arrest the hemorrhagic exudations, fermentation and putrefaction processes, with but little pain attending its application.

As a counter-irritant we use it thus: To one part turpentine add one part aconite and two parts iodine. Apply directly to afflicted parts by means of a cotton swab saturated with it.

In hypertrophic conditions, remove all irritated surfaces; apply oil of turpentine in such strength as is practicable.

METHOD OF MAKING ALLOY FILLINGS.*

BY J. R. SIMS, D. D. S., PERRY, GA.

I first remove all carious matter, regardless of where it is found, cut down all the walls to strong, even, polished-edge; then I cut retaining points in such shape as the tooth will allow or the case may demand.

I prepare the filling as usual, until the alloy is in readiness for the cavity; then it is placed on a slab and pounded for some little time, when it will be noticed that it works tough and sharp.

The pounding can be done by using a mandrel with end about the size of a pea, and hand mallet.

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*Extract from article in Dental World.

Then I proceed by placing little smooth blocks of it into the cavity, using smooth burnishers to press the alloy all over the cavity, following up this one after the other until the filling is complete.

After the burnishing of each piece of alloy the excess of mercury should be removed before any more alloy is placed.

I claim for the pounding to thoroughly mix the alloy, which is very necessary. Filling with burnishing works out the excess of mercury, and is not so apt to displace other points of the filling which has been previously condensed, as is the case with pluggers.

If this method is observed much fault-finding with alloy will be a thing of the past. Of course every one should use the very best alloy of which he knows.

GLOVES IN DENTAL SURGERY.

BY L. D. S.

In a recent issue of the *British Medical Journal* appears an article by Mr. J. Lynn Thomas, assistant surgeon to the Cardiff Infirmary, "On the Value of Gloves in Operative Work, with a Note on Cleansing of the Hands," with many good suggestions applicable to dental practice. The author, in giving his experience of using gloves in aseptic operations, states that he tried those made of silk, taffeta, thread and cotton. In septic cases he uses a non-permeable one of the rubber type, which are now for sale under the name of the patent film P. M. gloves. "Surgical operations from a glove-wearing point of view may be divided into septic and aseptic classes. In the (1) aseptic cases, one may state that gloves are worn to prevent the possible contamination of the field of operation by the hands of the operator, his assistants and nurses; (2) in septic cases, to protect their hands from being contaminated by the field of operation."

In dentistry we have been in the habit for a long time of using either the single rubber fingers, slipped over the fingers of the left hand specially—the fingers which have to handle the field of operation in extracting teeth. But the presentation more recently of a more than usual diseased condition of the roots of the teeth and foul gums, led us to adopt the common white kid gloves on both hands. Dentists who care to keep their hands soft and clean may rub mutton-tallow or vaseline well into the hands, nails and fingers, and sleep with them. This very much softens the kid, and nothing can be more cleanly or comfortable than to use kids treated in the same way, where one has to finger discharging abscesses in extractions. The sense of touch is not in the least impaired: the tallow or vaseline enables the operator to enjoy a more delicate manipulation than with rubber gloves, while the precautionary advantage to the operator is at once apparent.

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*From Dominion Dental Journal.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

PIGMENTATION IN THE MOUTH; ITS RELATION TO ADDISON'S DISEASE.—At a meeting of the Dermatological Society of London, held July 12th, Dr. Colcott Fox exhibited a patient, aged forty years, with a remarkable pigmentation of the mouth, which had been developing for four years. The lips, gums and mucous membrane of the cheeks were dotted with very dark brownish-black rounded pigment macules, mostly nearly the size of a split pea. They developed without subjective sensations. The man was apparently in perfect health and had a good family and personal history. There was not the slightest suspicion of any adrenal disease or carcinoma.

Dr. Stephen Mackenzie remarked that, in spite of the good health which this patient now enjoyed, he could strongly suspect an early stage of Addison's disease. On more than one occasion he had been enabled to foretell the onset of this affection while the patient was in good health by the pigmentation of the buccal mucous membrane.—*Practitioner.*

Disinfection and Care of Broaches.—It was the hardest thing I ever had to acquire, the habit of using clean broaches in treating root canals. I keep a dish of pure carbolic acid at hand in which I place my broaches, and after using them I drop them back in the pure carbolic acid. I do not believe in using pure carbolic acid in root canals, but I believe that method of keeping clean broaches is a good one. The carbolic acid is changed every week or ten days and kept nearly pure. It will not rust the broaches and they will last longer and give more service than if kept in a drier.—*T. B. Hartzell, in Review.*

Pressure of Vulcanite Plate Causes Pain.—An old lady, between 60 and 70 years, came to me complaining of pain on one side of the chin. The pain was associated with a tingling sensation and numbness from time to time, which of course led me to think of some pressure on the nerve trunk. I had made her a full vulcanite lower case twelve months previously, and I found the absorption of the alveolus, which had been very extensive at the time I made the case, had increased to such a degree that the vulcanite was pressing on the nerve trunk and producing these sensations in the chin. This sort of case is doubtless familiar to many of you, but I have not met with it myself before.—*N. G. Bennett, Jour. Brit. D. Asso.*

To Painlessly Remove Amalgam Fillings.—We are frequently called upon to remove an old amalgam filling in order to insert gold or new amalgam fillings, and the operation of removing the old fillings is often more painful than to shape a cavity preparatory to receiving a first filling. Now the operation can be quickly performed without any pain if you will apply the electric battery to the old filling. The galvanic current will immediately eliminate the mercury, and as the latter sweats from the metal you can gather it, thus preventing it from coming in contact with the tissues or person. After the mercury has been exhausted the filling remains as so much powder or alloy, and with chip-blower and spoons you proceed to remove the old metal.—*Dental Digest.*

To Overcome Sensitiveness of Teeth at Cervical Margin.—I apply to the surface such agents as carbolic acid, nitrate of silver, and, best of all, zinc chlorid. No one agent is successful in all cases. Apart from advising the avoidance of all acids, I recommend an alkaline wash, usually suggesting bicarbonate of soda or Phillips' milk of magnesia. This must be used as frequently as convenient, both by rinsing out the mouth and using with the brush, cautioning the patient to brush the sensitive surfaces especially well, and well down to the gums. I always advise that the gums be brushed, and if inflamed to encourage blood-letting, as this is most favorable to a return of health. It is well to recommend a narrow, *well-rounded*, and not a square-edged brush.—*C. C. Harris, in Cosmos.*

Easy Removal of Porcelain-faced Collar or Crown without Mutilation or Loss of Post or Band.—With the porcelain in position, two holes are drilled at the palato-cervical aspect, where the solder unites with band, and the latter split and spread outward by forcing an excavator between the band and root. The cement attaching the crown to the root is cut away by passing a right-angled fissure-bur on each side of the post. A heavy instrument is placed in the aperture made and, with the root as a fixed point, pressure is exerted upward, forcing the crown downward till it is displaced. With the porcelain missing, two drill-holes are made at the labio-cervical junction of porcelain and band, and the band split and separated as above. The cement is now removed anterior to and on each side of the post, and the crown is removed by pressure as above.

The advantages are that the post is left intact, the band retains its circumference and shape, and the entire piece is easily repaired.—*C. J. Grieves, in Cosmos.*

A Method of Taking Impressions in Cases of Overlapping Teeth Where it is Impossible to Get a Correct Impression with Modeling Compound or Plaster.—A core of modeling compound is formed about the undercuts caused by shape and position of teeth, and a plaster impression is taken with compound in position about the teeth. After the impression is removed from the mouth, the modeling compound core is replaced in a plaster impression and a model is run.—*H. Phillips, Cosmos.*

Gold Polisher.—It is said that oxide of tin is an excellent material for polishing gold.

AN EFFECTIVE COUNTER-IRRITANT.—A topical application to the gums, consisting of ether and alcohol in which are dissolved menthol crystals and a few crystals of cocaine, is far more effective than a dozen boxes of "pepper plasters," whether the pain is the result of extracting a tooth or of setting a crown, or a wedge or other pericemental inflammation. Apply on plasters made of rubber on one side and felting cloth on the other, held together with gum cement. Moisten the felt side and apply to the gum, renewing as required.—*A. Retter, Dental Cosmos.*

REPAIRING RUBBER PLATES.—Allow me a little space to describe a simple method of repairing rubber plates. With wax fasten the fractured pieces together and insert the palatal surface in plaster. Cut a narrow section through the fracture, and burr the adjoining surfaces one-eighth inch deep and one-quarter inch wide. No holes, dovetails, nor grooves are needed, but simply pack the fresh rubber with a hot spatula and flask.—*L. P. Haskell, in Dental Brief.*

SULPHURIC ACID FOR ALVEOLAR HEMORRHAGE.—In a case where other well-known methods had failed and the patient was becoming alarmingly weak from loss of blood, sulphuric acid dropped in the socket, after washing the mouth out with warm water, caused the flow to cease within three minutes, and there was no subsequent return.—*R. W. Turner, Items of Interest.*

TO CONTROL HEMORHAGE AT APEX OF ROOT AFTER PULP REMOVAL.—Wet a needle of bibulous paper in bichlorid of mercury and insert in canal. This will control hemorrhage every time.—*J. Y. Crawford, Alabama Dental Apprentice.*

VERMILLION AND OIL AS SEPARATING FLUID.—When casting plaster impressions, instead of using oil or soap for the separating fluid, paint them over with a paint made of vermillion and oil, then you will be better able to detect the line of demarkation.—*E. H. Lister, Items.*

ACETANILID FOR TOOTHACHE.—We have been experimenting with acetanilid in a rebellious tooth of our own. Pack the cavity with dry acetanilid and in a few minutes there is no toothache. A more convenient way is a saturated solution of alcohol and acetanilid with a few drops of caryophyllus. This preparation is an elegant one and meets many a demand, but a paste made of the oil just mentioned and arsenious acid, while it is painful for a few minutes, will soon leave no nerve to ache if applied on a little cotton.—*M. G. Price, Med. Summary.*

A GOOD PRECAUTION.—After employing sulphuric acid in root treatment, I frequently use alcohol before the soda solution, pumping it to the end of the canal. This prevents the effervescence from clogging fine canals.—*J. M. Walls, Review.*

DESENSITIZING CAVITIES BY MEANS OF COMPRESSED AIR.—I find that a warm current of air under twenty-five pounds pressure will in a moment or two so rid the tubule of moisture that it can be cut with sharp instruments as nearly painless as is ever necessary.—*W. H. Povall, Cosmos.*

BACKING FACINGS.—It is generally well to slightly countersink the holes punched in backing material on the side placed next to the tooth, as there is often a *little* porcelain attached to the bottom of the pin which prevents the backing going entirely home against the facing at that point.—*The Stomatologist.*

WITCH-HAZEL FOR HEMORRHAGE AFTER PULP REMOVAL.—The hemorrhage after immediate removal of pulps is sometimes copious, and I have found that witch-hazel freely used would stop the flow in a very short time. After using it freely I seal some mild, non-irritating antiseptic in the canal and let it rest a few days, and generally no tenderness develops.—*A. H. Peck, Digest.*

THOROUGH PREPARATION OF ROOT CANALS THE GREATEST ESSENTIAL.—I believe that in the preparation of canals for a filling the removal of all perishable material is a most potent factor in the success of the operation. After this is accomplished it makes little difference what the root is filled with so long as it is not irritating and seals the canal thoroughly.—*J. M. Walls, Review.*

SANDARAC VARNISH AND GUTTA-PERCHA POINTS AS A ROOT-FILLING MATERIAL.—We understand that Dr. C. P. Pruyn, of Chicago, has been using sandarac varnish and gutta-percha points for filling root canals, his theory being that the varnish will follow the remaining alcohol used for drying out. The results are reported good, the varnish appearing to enter all the openings of the tubuli.

To Remove Vulcanite from Between the Teeth.—Take a stiff, fine needle, mount it in a small handle or broach holder, sharpen it on two sides and you have a useful little tool for the work.—*E. H. Lister, Items.*

Care Should be Taken not to Overtreat Diseased Roots.—Overtreatment is a common error in these cases, and a wisp of cotton saturated with carbolic acid, creosote, iodoform, or other powder, forced against the irritated part will only cause renewed irritation. Make a soothing application and allow the parts to rest and cicatrize.

A healing part if favorably progressing should be let alone. The essayist has seen an extensive granulating surface under treatment of a surgeon daily irritated by spraying with pyrozone, thus breaking down the matrices of the new forming cells.—*J. M. Walls, Review.*

Mercury as an Aid in Second Soldering.—Immerse the solder (which you are about to use for secondary soldering) into quicksilver, and the latter immediately gives the solder a silvery coat. Then quickly place the solder in the desired position and apply the heat. Solder which has incorporated with it a sparing amount of quicksilver will melt readily and run very easily. The quicksilver does not in the least affect the color of the soldered piece, since the heat while soldering causes the mercury to evaporate.—*Dental Digest.*

A Modified Richmond Crown.—The collar-cap I made of gold and soldered with what little 18k solder I had. Then I placed the post in position, letting the end project to a certain extent, and ground a rubber plate tooth to fit. I adjusted the whole work in the mouth, and with adhesive wax bound the parts together. Removing the crown I invested it in plaster of Paris, and after a short while it was ready to solder. This I did with soft solder with the assistance of a small soldering iron. I was indeed surprised at my success, the crown as thus made had a beautiful appearance, and is yet in the mouth of the patient. The soft solder part of it, however, has turned perfectly black. A crown can be made in this manner in less than an hour, and in urgent cases their easy construction would warrant their use.—*C. V. Vignes, in Dental Clippings.*

CORRESPONDENCE.

DENTISTS ENTERTAIN DENTISTS.

Editor Ohio Dental Journal:

A very pleasant social affair occurred at the St. Charles Hotel, Norwalk, Friday evening, the occasion being a dinner given to the dentists of Sandusky by the dentists of Norwalk. The dinner was an elaborate affair of eight courses and was followed by speeches and other sociable features. The address of welcome was delivered by Dr. Seeley, of Norwalk, and responded to by Dr. Peck, of Sandusky.

Dr. Meade, of this city, was toastmaster, and all those present responded to toasts.

It was brought out during the evening that there will probably be formed an organization of dentists of Huron and Erie Counties, and it was suggested that some movement be made looking to the formation of a society to report to the members the names of those who fail to pay their dental bills.

The bill now before Congress to prohibit the patenting of any process in medicine or dentistry was discussed, and Drs. Seeley, Meade and Benson were appointed a committee to draw up a letter to Congressmen Kerr and Norton urging the passage of the bill.

The evening, as a whole, was a most enjoyable and profitable one to all present.

The doctors in attendance were Drs. Peck, Miller, Douglas, Atwater, Jacobs and Seeley, of Sandusky; Dr. Stoup, of Monroeville, and Drs. Seeley, Merritt, LeGalley, Benson, McDonald, Peasley and Meade, of Norwalk.

EDITOR'S NOTES.

THE AMENDED DENTAL LAW, AND WHY IT FAILED TO PASS.

The amended dental law was introduced in the State Legislature the last week before adjournment in April. It was passed unanimously by the Senate, and recommended for passage by the House committee; but in the House one Dr. Rothe, of Cincinnati, opposed the bill, and his motion to postpone indefinitely was carried.

It is alleged that Dr. Rothe said that the bill was gotten up by "one man"; that the profession in the State did not want it; that it was unjust, because it would legislate out of office the present members of the Board of Examiners, etc., etc.

We do not know who this Dr. Rothe is. It is said he is a dentist, but no one outside of Cincinnati seems to have ever even heard of him. We must confess that he either displayed gross ignorance regarding dental legislation and ignorance of dental matters in the State, or else he wilfully made charges for a purpose that were at least misleading in their character.

Regarding the new law, a committee of five was appointed by the State Dental Society a year ago last December to draft a law for the State of Ohio that would come nearer the requirements of other States for examination and registration.

One of the principal features of the new bill was that applicants for examination should possess diplomas from reputable dental colleges before being allowed to take the examination of the Board of Dental Examiners, and all graduates must be examined for license, except such persons as graduated from the dental colleges in this State before July, 1903. (Two of the dental colleges in the State—the Western Reserve, of Cleveland, and the Ohio Medical University, of Columbus, showed their hearty approval of this by having representatives at Columbus to urge the passage of the bill.) Such a requirement would encourage young men entering the profession to take a full college course, where, under the present law, any one can take the Board examination; Junior and Freshmen students, as well as office students, are allowed to be examined, and if they can pass the required test the Board is obliged to grant them a license which makes them as much professional men, in the State of Ohio, as any college professor, graduate or old practitioner.

By the present law, any college which possesses buildings, by lease or otherwise, and equipments valued at not less than $5,000, which has a three years' course, six months each year, and a curriculum including anatomy, physiology, pathology, chemistry, microscopy, materia medica, metallurgy, operative, mechanical and surgical dentistry, is considered a reputable dental college, and the Board is obliged to recognize diplomas from such schools, whether or not these colleges are members of the National Association of Dental Faculties, or Examiners. Under the present law, the Board has been obliged to recognize a number of schools not in the National Associations, and there are others applying which will also have to be recognized.

Another feature of the proposed law was an increase of license fee from the present $2.00 fee to $20.00. This would have given the Board a surplus fund out of which to secure special counsel to assist in prosecutions for violations of the law in any of the courts of the State. From the present small fee hardly enough can be maintained to carry on the present running expenses of the Board, let alone bringing to justice many who are practicing in the State that should be denied such privileges.

The above are but a few of the many changes needed to better protect the profession in Ohio. Yet, Dr. Rothe says that the profession does not want other legislation than it now has, and that no one is making complaints.

We can show hundreds of letters of complaints and protests from dentists throughout the State.

For years Ohio has been the dumping-ground for dentists who could not get permission to practice in other States, and it has been the laughing stock of the whole profession and the subject of all sorts of ridicule on account of its poor law.

Over 2,300 licenses to practice in Ohio have already been issued by the Board, and still the applications are pouring in from all sections. In consequence Cheap Johns and quacks are to be found in abundance, and prices for dental work are being prostituted everywhere.

Dump all your non-acceptables into Ohio, is the general cry. Start up colleges at every Jim-crack Corners from Maine to California, and for all these graduates cannot get permission to practice in other States, you can send them to Ohio, and it will have to accept and license them. Yet the profession in the State does not need better legislation, says this Dr. Rothe.

The Board of Examiners has labored assiduously to bring about a better state of affairs in Ohio, but the law is so lax that the Board is handicapped at almost every turn. Yet it is continually being censured for this and that, that the law does not prohibit and that the Board is powerless to rectify.

The Board did its best to get the new law passed. Three of its members were on the law committee, and the other two did all they could to urge its passage.

'Tis true the new law would have legislated them out of office before their terms expired, but there was not a member of the Board but that was perfectly willing to step down and out for the sake of better legislation in the State, and every member worked hard to secure it for the benefit of the profession.

The Board will continue to do the best it can under adverse circumstances, but what complaints there are in the future should be addressed to Dentist Rothe, Representative, Cincinnati, Ohio, for he and his instigators are the ones to blame for keeping dental legislation on the low plane it now occupies in Ohio.

PHYSICAL EXERCISE FOR DENTISTS.

No class of men need physical exercise more than indoor workers, and the dentist especially is prone to neglect this important duty. 'Tis true that a refractory molar or irate patient occasionally affords him exercise, but such physical exertion is variant; and it may prove that after all the other fellow gets the most benefit from it. But the sedentary habits of the dentist make it necessary for him to exercise in some way would he keep his health up to the desired standard. A neglect of this will tell on any man and he is apt to decline in health more than he is aware.

Physical exercise, to be beneficial, need not necessarily be severe, but, on the other hand, some light exercise, taken with regularity, will always result beneficially.

Neither is it necessary to have apparatus, such as dumbbells, Indian clubs, etc., unless one wants them handy for protection, for the construction of the body itself makes it possible, by various movements, to exercise, develop, and keep in a normal condition all its muscles.

With this in mind, we asked Dr. Kennicutt, physical director of the Y. M. C. A., Cleveland, to describe a few exercises especially applicable to dentists, with the result that there appears in this issue an article from his pen, fully illustrated.

While, as he says, it is best to take the exercise in the morning, it may, with benefit, be taken at any time and in any place, requiring, as it does, no apparatus.

Realizing the benefits from such exercise we call our readers' attention to the article, trusting that all may be benefited by a practical application of the rules set forth therein.

A RECONCILIATION.

In the March number in an editorial, "Remarks About Our New Dress," we intimated that the editor of the *Indiana Dental Journal* had called us names, or at least insinuated something of the sort. Perhaps we were over-sensitive and misinterpreted his meaning, for he says, in the April *Indiana Dental Journal:*

"We never called you no names, neither. We wrote that little notice in a hurry, and didn't say all we had in our mind. What we meant to say was that the new cover is the prettiest cover we ever saw. The string of green peas around the boiled lobster near the top of the page gives a cool-and-airy effect that is extremely pleasing. The spelling seems to be all right, and the pineapple on the dew-dad at the top of the page is about ready to cut and serve with sugar and cream. The scientific nature of the publication is indicated by a chain of bacilli in black, about the reading matter, and the whole blamed business is recherche and decidedly lum-tum. We like it, we tell you, we like it. From the strepto and diplo-cocci interspersed among the green peas to the bunches of red ribbon on either side, at the top, indicating that the cover took second prize at the county fair, we like it. It is all right."

"The prettiest cover we ever saw." See? saw. "The spelling seems to be all right." Thanks, you relieve our mind. We weren't sure before, especially of the two syllable words. "The whole blamed business,"—What's that you say?—"is decidedly lum-tum." We don't exactly know the meaning of this Indiana Choctaw, but it must mean something nice or Brother Hunt would not have said it. "We like it, we tell you, we like it. It is all right." Ah! we would take off our hat to that if we were sure another piece of the crown wouldn't drop out. But we like you, Brother Hunt, yes, we do, you say such nice things about us. Come over into Ohio, where we raise wheat and corns all the time and the devil occasionally. We'll treat you right and share our honors with you. We'll feast you on green peas and tap that lobster. No, no; we mean the pine. And treat you to "apple-jack." It's a dead sure cure for the blues from an attack of in-Digest-ion.

Then we will give you some of that "dew-dad" seasoned with diplo and strepto-cocci It's a swell affair, we tell you, right swell. Bring your "Trust paunch" along and we will trust to the activity of the "combination" to swell that also. But they are not pathogenic microbes; don't be afraid, for they won't harm you "mor'n nuthin'." No more than the tetanus bacilli on your own cover will give a man the lock-jaw if he reads your journal. 'Twon't do it, my friend, we've tried it and our wife will testify that the action of our jaw has never even hesitated. Then we'll give you one of our red ribbons. It will go nicely with the blue ribbon you're accustomed to wear, and with your C. E. (Country Editor) button. Then we'll show you some of the tricks in trade that may be useful to you: How we don't have to rush to the doctor when out of "sorts," nor to the baker to get "pi." Nor to hell when we want the devil; we get it right here in our own office. Nor to a bank when we want "quoins," nor to a gunsmith when we want a "shooting-stick," nor to the pump when we're dry—and have ten cents in our pocket.

Come along, Brother Hunt, come over and have a good time and you're railroad fare won't cost you a cent—if you walk.

SOCIETY.

NORTHERN OHIO DENTAL ASSOCIATION.

The forty-first annual meeting of this Association will be held in the Colonial Hotel, Cleveland, June 5-6-7, 1900. A cordial invitation is extended to all reputable dental practitioners. Following is the

PROGRAM.

1 Reading of Minutes.
2 Report of Officers and Committees.
3 Reading of Papers and Discussions.
4 Election of Officers.

1 President's Address......................Dr. L. L. Barber, Toledo.

2 "Diseases of the Peri-Dental Membrane,"....................
............................Dr. Florence M. Taylor, Cleveland.
Discussion opened by Drs.
W. H. Whitslar, Cleveland.
S. B. Dewey, Cleveland.

3 "Two Prosthetic Cases in Practice,"....Dr. J. W. Green, Ashtabula.
Discussion opened by Drs.
C. E. Hurd, Cleveland.
E. C. Miller, Findlay.

4 "Quackery, Real and Imaginary,"...........................
...........................Dr. Grant Mitchell, Pittsburg, Pa.
Discussion opened by Drs.
C. R. Butler, Cleveland.
Frank Acker, Cleveland.

5 "The Causes of Dental Abnormalities,".....................
.................................Frederick L. Miles, Cleveland.
Discussion opened by Drs.
Geo. H. Wilson, Cleveland.
J. W. Van Doorn, Cleveland.

6 "Treatment if Children's Teeth,"......Dr. G. H. Ormeroid, Warren.
Discussion opened by Drs.
S. B. Dewey, Cleveland.
W. H. Fowler, Painesville.

7 "Sterilization in Dental Practice,".Dr. J. Bert George, East Liverpool.
Discussion opened by Drs.
J. W. McDill, Cleveland.
Henry Barnes, Cleveland.

8 "Professional Honesty,"..............DR. W. BUZZELL, Port Clinton.
Discussion opened by DRS.
J. F. DAUGHERTY, Canton.
L. W. BALLARD, Alliance.

9 "Chemistry in Relation to Dental Science,"..DR. E. B. LODGE, Cleveland.
Discussion opened by DRS.
J. K. DOUGLASS, Sandusky.
D. H. ZEIGLER, Cleveland.

10 "Advantages in the Use of Crystal Mat Gold,"..DR. N. H. BISHOP, Andover.
Discussion opened by DRS.
W. B. CONNOR, Akron.
J. F. STEPHAN, Cleveland.

11 "The Repair of Failing Gold Fillings by the Use of Amalgam," ....DR. C. B. MOWER, Wooster.
Discussion opened by DRS.
H. L. AMBLER, Cleveland.
J. F. SIDDALL, Oberlin.

12 "Duties We Owe to Our Patients,".......DR. C. W. PURCELL, Lorain.
Discussion opened by DRS.
N. B. ACHESON, Youngstown.
D. E. KELLEY, Ashtabula.

13 "Reflex Lesions of the Oral Cavity Associated with Pregnancy,"..........................DR. F. A. MCAULEY, Cleveland.
Discussion opened by DRS.
J. R. BELL, Cleveland.
F. S. WHITSLAR, Youngstown.

14 "Some Thoughts on Practical Dentistry,"..DR. T. S. SEELEY, Norwalk.
Discussion opened by DRS.
T. J. PHILLIPS, Canton.
S. A. PANCOAST, Ashtabula.

15 "The Significance of Facial Expression,"...DR. HUGH B. MITCHELL, Canton.
Discussion opened by DRS.
W. A. PRICE, Cleveland.
V. E. BARNES, Cleveland.

16 "Individuality vs. Personal Requisition,"...DR. M. C. RAMALEY, Cleveland.
Discussion opened by DRS.
J. W. LYDER, Akron.
C. L. SLUTTER, Alliance.

17 "What Filling Materials Shall be Used to Best Serve Case in Hand,".......................DR. STEPHEN D. POTTERF, Defiance.
Discussion opened by DRS.
H. F. HARVEY, Cleveland.
G. D. BILLINGS, Medina.

18 "An Experience in Replantation,"....Dr. Harry L. King, Wellington.
Discussion opened by Drs.
J. R. Owens, Cleveland.
H. E. Dunn, Warren.

19. "An Interesting Case in Practice,"........Dr. G. A. Kennedy, Kent.
Discussion opened by Drs.
C. T. King, New London.
J. G. Wherry, Elyria.

20. "Anesthetics in Dentistry,"...............Dr. A. E. Mann, Findlay.
Discussion opened by Drs.
W. G. Ebersole, Cleveland.
F. L. Warren, Painesville.

21 "The Decay of the Teeth,"...........Dr. L. L. Bosworth, Cleveland.
Discussion opened by Drs.
D. A. Allen, Toledo.
W. G. Johnson, Cleveland.

22 "Some Reasons Why Teeth Should Not be Extracted in Youth."
................................Dr. G. B. Williamson, Akron.
Discussion opened by Drs.
C. H. Griffin, Ravenna.
J. H. Wible, Canton.

23 Voluntary Papers.

General Discussion.

CLINICS.

1 "Surgical," Dr. W. G. Ebersole, Cleveland.
2 "Amalgam Filling, Using Flexible Matrix,"
Dr. C. D. Peck, Sandusky.
3 "Rapid Process of Cutting a Cavity in an Artificial Tooth."
Dr. F. D. Davis, Minerva.
4 ("Tinfoil Filling—Hand Mallet,") Dr. H. L. Ambler,
("Tin-Gold Filling—Hand Mallet,") Cleveland.
5 "Wire Clamp," Dr. H. F. Harvey, Cleveland.
6 "Orthodontia—Detailed Construction of a Stationary Anchorage Appliance," Dr. Varney E. Barnes, Cleveland.
7 "Surgical Orthodontia," Dr. S. M. Weaver, Cleveland.
8 "The Removal of Gum Tissue from Unerupted Third Molars, by Original Instruments," Dr. J. R. Bell, Cleveland.
9 "Setting a Davis Crown," Dr. J. R. Owens, Cleveland.
10 "Phagedenic Pericementitis," Dr. I. W. Brown, Cleveland.
11 Orthodontia—"A New Method of Making Regulating Appliances," Dr. W. A. Price, Cleveland.
12 "A Filling Made with Non-Cohesive Gold,"
Dr. W. A. Siddall, Cleveland.

13. "Compound Cavity Filled with Moss-Fiber Gold,"
Dr. D. H. Zeigler, Cleveland.

14 "Immediate Painless Removal of Pulps,"
Dr. G. W. Woodbury, Cleveland.

15 "Combination of Amalgam and Cement as a Filling Material,"
Dr. H. C. Kenyon, Cleveland.

16. "New Method of Shaping Plates to Dies,"
Dr. E. L. Patchin, Cleveland.

The new Colonial Hotel is especially fine in all its appointments. The proprietors, Messrs. McCleary & Furst, have made the following rates for this meeting: One in a room, without bath, $3.00 per day; two in a room, without bath, $2.50 per day. Fifty cents a day extra for room with bath.

RESOLUTIONS.

Whereas, The success of our meetings largely depends upon our intelligent discussion of the subjects presented, therefore,

Resolved, That the papers to be read before this Association shall be placed in the hands of those appointed to open the discussion at least thirty days previous to the date of the Annual Meeting.

Resolved, That in case a member cannot be present, he shall furnish a written discussion.

TRI-STATE DENTAL ASSOCIATION, I., K., I.

The Tri-State Dental Association of Indiana, Kentucky and Illinois meets at Evansville, Ind., May 8-11, 1900.

Elwood Smith, President, Mt. Vernon, Ind.

W. H. Brosman, Secretary, Albion, Ill.

ILLINOIS STATE DENTAL SOCIETY.

The thirty-sixth annual meeting will be held in Springfield May 8th to 11th, inclusive.

Dr. E. H. Allen, Executive Committee, and J. E. Hinkins, Supervisor of Clinics, promise an excellent program.

All reputable dentists are cordially invited to attend.

A. H. Peck, Secretary.

KENTUCKY STATE DENTAL SOCIETY.

The thirtieth annual meeting of this society will be held at Louisville, May 29-30-31, 1900. An elaborate program has been prepared and includes the names of many prominent dentists. It promises to be the best meeting ever held in the State. Members of the profession are cordially invited.

F. I. Gardner, Secretary,
Louisville, Ky.

OUR AFTERMATH.

PERSONAL AND MISCELLANY.

Acetylene May Cause Serious Accidents when mixed with air or oxygen, such mixtures being peculiarly liable to explode. It is not surprising, therefore, to find the *London Gazette* giving notice this week that it is proposed to submit to her Majesty in Council the draft of an Order in Council providing that acetylene, when in admixture with atmospheric air or with oxygen, shall be deemed to be an explosive within the meaning of the Explosives Act, 1875, and that it shall not be manufactured, imported, kept, conveyed, or sold.

Arsenic in the Human Body.—In a paper communicated to the Academie des Sciences, Monsieur Armand Gauthier showed that arsenic plays a part in the organism as important as that of iron. The Asiatics, as well as the Greeks and Romans, prescribed it as a medicine. Nevertheless, it is only now that the part played by arsenic, which is not tound in the blood, has been made out. Last time, Monsieur Gauthier introduced an organic arsenic, under the form of cacodylic acid, for the treatment of phthisis, and with so much success that large quantites of it have been made. Knowing that the thyroid gland contains iodine, he suspected that it also produces arsenic, and investigation of these glands in cattle and in man proved that his idea was correct. The thyroid gland of man is the richest in arsenic, but the thymus gland also contains it. Arsenic plays the part of organic phosphorus in the organism, he say, and it occurs in the thyroid gland in the state of nucleine. Arsenic ought, therefore, to be present in the organism in sufficient quantity, or else my xœdemic troubles arise. A very little arsenic is also found in the brain and in the skin.

DR. GARRETT NEWKIRK, a prominent dentist of Chicago, has left the "Windy City" and taken up his residence at Los Angeles, Cal.

PRECOCIOUS DENTITION.—Dr. R. Lynn Heard (*British Medical Journal*, December 2) relates the case of an infant, a girl delivered at seven months and a half. Labor was induced on account of justo-minor pelvis. The baby was perfectly normal and healthy in every way, but had the two lower central incisors appearing under the gum. These cut through in a few days after birth, the right on the fourth and the left on the fifth day, as well as the author recollects. As in Joukovsky's case, in a few days an abscess began to form and the teeth to loosen. Dr. Heard then extracted them, and, as in the other case, it required a distinct effort to remove them. They were typical milk teeth of a whitish color. For some time after the lateral incisors appeared there was a gap, but at the time of writing this had closed, and no one, unless they were in the secret, would remark anything amiss. This case is of special interest, owing to the fact that the teeth were cut at a period of seven-months-and-a-half gestation.

INTERCHANGE OF STATE LICENSE.—The examining board of New Jersey, and the Board of Regents of New York, have completed arrangements for interchange of license between the two States.

ANOTHER DENTAL COLLEGE.—Rumor has is that in the near future a School of Dentistry will be attached to the Hahnemann Hospital College of San Francisco.—*Coast Journal.*

HEALTH HINTS.—Don't work your ears; it may cause action in the brain cells.

Don't allow your necktie to mount above your collar; it creates insanity in people you meet.

Always wash your feet in water; molasses attracts flies.

Don't work in winter; it brings on pneumonia, and in summer it debilitates by increasing the perspiration.

Always breathe either through your mouth or nose; deafness may result from breathing through your ears.

Eat fruit and vegetables in the summer; they are too expensive in the winter.

Cats carry diphtheria; don't contract diphtheria if you keep a cat.

Always disinfect your moustache before kissing your—wife. At the left-hand side of the bar you will find coffee and cloves for this purpose.

Don't spit on the floor; with a little practice you can hit the rug.

Avoid all drafts; learn the step of the bank cashier and jump into a closet.

Never use face powder so it will show. Fool the people and you may marry rich.

Early to bed and early to rise does very well with preachers and guys, but makes a man miss all the fun till he dies and joins the old stiffs that are up in the skies. Go to bed when you please and lie at your ease, and you'll die just the same from a Latin disease.—*Millard's Medical Journal.*

A Leaf From a Sharp Lexicon.—A jolly correspondent notes and forwards the following definitions:

Christian science: Suggestion plus absurdity.
Divine healing: Suggestion plus faith in God's mercy.
Osteopathy: Suggestion plus massage.
Hydropathy: Suggestion plus water.
Metaphysical healing: Suggestion plus fog.
Hypnotism: Suggestion plus sleep.

Spiritualism is somnambulism, and theosophy is an intellectual pleasantry.—*Cleveland Medical Gazette.*

Dr. McKellops Banqueted.—The St. Louis Dental Society tendered a banquet to Dr. H. J. McKellops, at the Planter's Hotel, on Saturday evening, March 24. About forty were present. A splendid photo-engraving of Dr. McKellops adorns the first inside page of the menu card.

Stopping the Dentist's Mouth.—"That idiotic old Miss Parrot thinks nobody knows her teeth are false."

"Ridiculous. Of course, the dentist knows it."

"Yes, but she's going to marry him."

It Fills the Bill.—Here is a unique sign, said to be posted on a building in an enterprising settlement:

Teeth Pulled Cheap for Cash.
—Also—
Music Teached on the Pianner.
Coffins on the Installment Plan.
Now is the time to bury your
Friends at a Reasonable Cost.
We also Dig Graves.

You can't get ahead of that kind of an enterprise. The firm forgot to add, however, that they served ice cream in season, and did first-class embalming.—*Southern Dental Journal.*

An Irish View of Dentistry in the Army.—According to the *Northwestern Lancet*, two Irish volunteers were being examined prior to enlistment in the British army in Africa. They were refused on the ground of having bad teeth, whereupon one of them said "he thought he was going to the war to shoot Boers, but he didn't know he had to eat them."

A Bacteriological Laboratory for the Study of Bubonic Plague is to be established by the Italian government on the Island of Pianosa.

A Dentist's Invention.—Dr. D. Genese, Baltimore, has gone to Paris to take charge, at the Exposition, of the exhibit of some new machines used for the manufacture of a new form of rice capsule, and the compounding of chemicals. Dr. Genese is the inventor and has sold the rights to Bourroughs, Wellcome & Co., London, for a consideration of $15,000. The machines are to be exhibited in the Chemical Department.

THE

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CONTRIBUTIONS.

STEEL AND SOME CONSIDERATIONS RELATIVE TO ITS USES IN DENTISTRY.

BY E. BALLARD LODGE, D. D. S., CLEVELAND, OHIO.

Unlike other metals the term steel has no symbol derived from the Latin or Greek. Gold is represented by the abbreviation Au., aurum. Iron by Fe., ferum, etc. This is because the metal steel is not found in nature as such, but is a manufactured product consisting chiefly of iron and carbon in chemical combination. The study of this metal should be preceded with a consideration of these constituents. Iron is widely distributed in nature not only as found in ores throughout the earth but is known to exist in meteors and in the sun itself as determined by spectroscopic analysis. Iron, moreover, forms an important constituent of the blood. Carbon, the other necessary element of steel, is widely distributed in nature. Carbon in pure state is found as diamond, charcoal, graphite, different forms of the same element. Coal and coke are largely carbon. This element, which is a necessary constituent of animal and plant life, is exhaled from the lungs with every breath in its gaseous state combined with oxygen as carbon dioxid. Manganese, silicon, phosphorus, etc., are also found in steel. When iron and carbon are chemically combined in the proportions ranging from one-half of one per cent. to one and one-half per cent. of the latter, we have steel; a metal worthy to be classed among the royal metals. The progress of dentistry and surgery has been due in large part to the improvement in the appliances and instruments, which have kept pace with research and development in other lines. The dentist, the nature of whose work is such that it embraces a working knowledge of several of the arts, should not only be able to keep his instruments in repair, but he likewise should be able to construct for himself such appliance as the demands of his work may indicate. Sometimes a special form of instrument will present itself to the mind of the operator, and with a well equipped laboratory at hand, it is often expedient to avail one's self of a spare half hour, to produce a new and useful appliance. Let us suppose that one wishes to make an enamel chisel. Take from the worn-out excavators, such an one as has a reasonably thick shank, which it is presumed is hard steel.

The first thing to do is to anneal it so that it will be soft. This is done by heating to a dull red color, and allowing to cool slowly in the air.

Care must always be taken not to over heat steel, as in so doing it will be decarburized, and irreparably injured. When steel is burned, its surface becomes blistered or scaly. This is because of oxidation of the carbon, after which it becomes incapable of taking a fine temper.

Having softened the steel, place the shank portion on the anvil, and with a few well directed blows of a suitable machinist's hammer, shape the material approximately to that desired in the completed chisel. This done, take it to the lathe, on which is mounted a four-inch carborundum wheel, and with a rotary motion of the instrument between the thumb and fingers, grind down the shank to a gradual taper. Shape the chisel to the form and size desired, paying due regard to strength and proportion The most difficult and exacting part of the work is now to be performed, viz., the hardening and tempering process. There are several methods employed in giving hardness to steel, according to the character of the particular article. All hardening of steel, however, depends upon heating to a certain temperature, followed by sudden cooling, in which the carbon and iron are crystallized in the form of carbid of iron. The steel is then said to be full hard. The amount of hardness developed in steel is in direct proportion to the amount of carbon, and the rate of cooling from the heated state. For the purpose of the case in hand, cold water will answer. The addition of salt will increase the conductivity, and acid will remove oxide.

The writer's method is to hold the instrument point downward, directly above a tumbler of cold water, and to heat carefully to a cherry red with the foot-bellows and blow-pipe. Just the instant the proper temperature is attained, plunge the instrument into cold water. The chisel is now ready for the polishing and sharpening. The latter being done on the oil-stone in the ordinary way.

Different instruments require different degrees of hardness according to the use for which they are designed. To temper steel to any desired hardness is an operation as interesting as it is difficult. When steel is heated above a certain point a series of colors develop upon the surface due to the formation of a film of oxid. These colors vary from a faint straw-yellow to dark blue including yellow, brown, purple, and blue, with the one blending gradually into the other, as do the tints of the rainbow. This phenomenon accompanies the heating of soft steel, as well as hard. For the purpose of tempering it is only of value when the steel is known to be full hard before-hand.

By a glance at the following table of E. C. Kirk's can be seen the temperature and shades for various articles:

Temperature	Color.	Temper.
430° to 450° F.	Very faint yellow to pale straw.	Lancets, razors, surgical instruments, enamel chisels.
470°	Full yellow	Excavators, very small chisels.
490°	Brown	Pluggers, scissors, pen-knives.
510°	Brown with purple spots	Axes, plane-irons, saws, cold-chisels, etc.
530°	Purple	Table knives, large shears.
550°	Bright blue	Swords, watch-springs.
560°	Full blue	Fine saws, augers, etc.
600°	Dark blue	Hand and pit saws.

By the aid of these colors, it is possible to determine accurately the quality and temper of specimens of steel of the same chemical composition if it is known that before heating, the metal was full hard, as under these conditions the shades of the oxid film are an exact index. To produce an excavator point with the temper attained and after rendering the metal full hard, it is only necessary to heat the shank carefully until the yellow color creeps along to the part desired and then to chill it suddenly in cold water. If it is desired to have the shank of an instrument less hard and brittle than the point, a very good way after having tempered the point to the degree desired is to hold the point between the beaks of a pair of moderately heavy pliers and then to direct a blow-pipe flame on the shank for a few seconds. The pliers will prevent the heat from letting down the temper in the point, and still the shank is made softer. Care should be taken to keep the pliers on the point for a few moments after the heating, in order that the heat in the shank may not pass down into the blade and thus injure it. Toughness and flexibility may be imparted to steel independent of the method of the hardening and letting-down process. This is attained by hammering. Repeated blows of the hammer properly applied, convert steel from a crystalline structure to that of a more fibrous nature, rendering the steel sufficiently flexible for certain forms of springs. Hammering of steel increases tensile strength, toughness, and flexibility. This is accompanied by a reduction in volume, and an increase of specific gravity.

ARE ABSCESSED TEETH MORE PREVALENT DURING EPIDEMICS OF GRIPPE?

1. During the grippe epidemics have you had an increased number of teeth to treat from death of pulp?

2. Have you found them more difficult to cure during such epidemics?

3. Have you treated the teeth the same as at other times?

4. Have you advised or prescribed any systemic treatment during such periods?

5. Cite one or more stubborn cases of this sort in your practice, describing case, treatment, and result.

ANSWERS.

Dr. H. F. Harvey, Cleveland, O.:

1. Yes.
2. Naturally so with patients in such physical condition.
3. Yes, but do not fill roots until patients have recovered.
4. No.

Dr. J. W. Van Doorn, Cleveland, O.:

1. I believe that, during the prevalence of la grippe, in my own practice I had occasion to treat a greater number of teeth in which the pulp was involved than is commonly the case. They were and are cases, for the most part, beginning with a slight tenderness under occlusion or percussion, and progressing more or less toward an acute periodontitis.

2. I think that they have been a little slower in returning to normal conditions than is usually the case. The soreness and tenderness incidental to the condition have lingered apparently longer than is usual.

3. Essentially, I have treated these cases the same as I ordinarily would do, with the exception that in some two or three cases, which would be classed as obstinate, I have had occasion to use sulphuric acid in the root canals. This practice I am inclined to regard with favor, judging from the efficiency of it in these critical cases.

4. Usually, when la grippe is among your patients, a few questions will develop the fact that the doctor is already prescribing. When such is not the case, I have prescribed, variously, oil of wintergreen in capsules, 5 drops after each meal; quinine, in 2-grain capsules, every two hours on alternate days for a week or until pains and aches have disappeared. To correct the cachexia generally, I have often advised the use of Fellows' Syr. of Hypophosphites Comp., a teaspoonful after meals; also Gray's Glycerine Tonic Comp., a dessert-spoonful after meals; and the following, which I regard as especially effective:

Acidi Phosphorici dil. ....oz. ½
Syr. Zin.

Occasionally I have simply suggested sulphate of strychnine in 1-60-grain gelatine-coated pellets, one to be taken after each meal until improvement is observed; the bowel should be kept open during any or all of this systemic treatment. A glass of Hunyadi water before breakfast in the morning, or the same quantity of the Citrate of Magnesia Sol., will usually secure the proper condition of the bowel.

5. It is difficult to describe a case of this sort in writing about it. So many things in manipulation, perfectly clear to yourself, are not at all so when written about, that I am loath to describe an individual case. I will simply say, therefore, that in some cases, where apparently no difficulty was experienced in locating, cleansing and disinfecting the canals, and yet soreness and tenderness, even aching, remained, a subsequent opening up, thorough flushing of canals with sulphuric acid ranging from a 75 per cent. solution to the pure acid, resulted in a cure. The tooth to be treated with the $H_2 So_4$ should be the only one included in the rubber, and the acid should be gently worked down or up toward the apex. A rather large broach should be used, owing to the fact that the delicate and smaller sized ones frequently break. I would apprehend no danger, on the contrary good results, should a very minute quantity of the acid be forced through the apical foramen. The acid treatment should be followed by a flushing and washing of the canals with a solution of the bicorbonate of soda until absolutely no effervescence is observable. I have treated some persistently bad cases in the manner outlined, and, so far as my knowledge of those cases goes, with uniformly good results.

Dr. C. N. Johnson, Chicago, Ill.:

In answer to your questions for the Ohio Dental Journal I will say that during the grippe epidemics I am not aware that I have had a greatly added number of teeth to treat from death of the pulp.

2. During any profound constitutional disturbance, such as grippe sometimes brings about, it is always more difficult to con-

trol any local condition. This is true of other diseases which lower the viatlity as does grippe.

3. Practically the same.

4. In case I deem systemic treatment necessary, I invariably refer the patient to the family physician.

5. I have had no particularly stubborn cases which I could attribute to grippe.

Dr. Henry Barnes, Cleveland, O.:

1. Yes.

2. Yes.

3. Yes.

4. Have referred patients to their family physician for systemic treatment.

5. The cases are not unlike the usual chronic cases following death of the pulp, except that there may be more or less antral complications. I have found the usual treatment of abscess to be the best for these long continued cases. The main point is to keep up antiseptic treatment until the gripp has spent itself, when the usual result (cure) follows.

I have noticed the recurrence of grippe in its various forms by the increased number and condition of cases from year to year, and at times the trouble has manifested itself in the larger number of stubborn cases just previous to the recognition of the presence of grippe by the physicians. Pulps are more difficult to remove on account of congestion at this time. There is undoubtedly a lowering of the normal condition during this period, and it must follow that any inflammatory trouble occurring at this time, whether by accident or otherwise, can not have the assistance on the part of nature that she usually accords.

A well known Cleveland physician likens grippe to a pond four feet deep, and the four foot man is drowned, while he of six feet is in it to the extent of four feet.

Dr. E. A. Bogue, New York:

1. No.
2. No.
3. Yes.
4. No.

I believe in prevention. Pulps do not usually die unless exposed. Exposure means a big cavity. Every big cavity began small. If I do my duty by regular patients, they never have exposed pulps, tooth-ache and "monkey and parrot times" generally. Mine is a family practice in which the only cases of tooth-ache worth mentioning are in the mouths of new patients; or the breaking out of old cases that have been treated in former years.

THE PROPER FINISHING OF FILLINGS.*

BY W. M. MEGGINSON, D. D. S., TOLEDO, OHIO.

The proper finishing of fillings; how important is this much-abused part of the practice of modern dentistry. It seems to me one of the rational constituents, and at the same time *very* important part of our work as outlined in the present, by the word "Dentistry."

Dentistry, as applied to-day, means the rational treatment of the teeth, and immediate surrounding parts, for such diseases and departures from the normal as will restore them as near as science (combined with nature) is capable of doing, to their normal and physiological action or condition.

We fill teeth, why? Because it is the rational and only treatment for caries. Now what do we do? We propose to fence out from that cavity microscopic bodies, to cut them off from communication with the inside of that tooth, after we have gotten the cavity free from the "pesky critters."

If decay in teeth was caused by an acid, then the finishing of the filling would cut no figure whatever; but, as we positively know by microscopic examination, caries is caused by microorganisms, or bacteria, we must not only fence them out, but keep them out.

It has been estimated that in a healthy mouth there is at least twenty different varieties of bacteria to be found. Just think of it, gentlemen; if in a healthy mouth free from decay we can distinguish about twenty distinct kinds of bacteria, what must an unhealthy mouth full of decay be?

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*Read before the Toledo Dental Society.

To make a filling a success there are several requirements to be thought of, such as, instruments of the proper variety; cavity shaped to retain a filling, together with the cleansing of the same; material properly prepared and introduced, also the surface of that filling must be smooth to protect soft tissues from injury. After filling, the tooth must be free from pain, the material must be of a more or less indestructible nature, have adaptability and tenacity, resistance to the mechanical action of mastication and chemical agents, the faculty of introduction and consolidation, together with absence of injurious galvanic chemical action on teeth or system. In speaking of the filling being smooth to protect tissues, means in its roughest sense.

Fillings are influenced by constitutions, conditions of health, previous to and subsequent habits, especially hygienic conditions of the mouth. Now then, in the average mouth just think what the conditions are. We find the teeth more or less coated with a cheeselike substance and anything but a healthy saliva. Now, that cheeselike mass is literally alive with bacteria, and in order to do damage must remain on the tooth for a time, that is, long enough to get a foothold, and a rough margin or an unpolished surface is just the place for them to stick and defy the tongue and cheek, aided by saliva, to wash them off. Here one can use a tooth-brush in vain, for the bristles of the best tooth-brush ever made cannot get into the small V-shaped space where the (you might call them) danger-points lie. The best mouth-wash we can use, will fail to disinfect, as from the nature of a mouth and our hurry-up life, we cannot take the time nor use strong enough remedy without injury to the mouth itself.

You will notice that decay always starts in some out-of-the-way place where there is a corner pocket, or roughened surface.

Let us take a proximal cavity in a bicuspid and build up a nice contoured filling; now then, let us polish it. Get your engine with a good disk-carrier and an exceptionally thin disk; by holding a finger, thumb or instrument, anything, to the back of it, you can give it a wiping motion which will follow the neck of the tooth and not destroy the bell-shape of tooth or filling; now, by running your engine both ways all this can be accomplished very easily and swiftly with but little annoyance to patient or operator.

In putting on the final polish, I use a thin cuttle-fish disc, and last, crocus paper discs; the slight space between two approximal fillings will be just a little more than the thickness of a cuttle disc, and that is just about right, as it will close up some and maybe give some crowded tooth back of it a little more room, and thus reduce chances of decay. To back up that idea, just please think of the many mouths you have examined where the teeth are far apart and note the small amount of decay.

I want to enter a plea for the use of very thin discs in this work for several reasons; some are, ease of contour, speed and high polish. You all know that plus or extra contour makes the ideal filling, and why? Because food is not forced between the teeth, causing a breeder of decay and a recession or inflammation of the gums; besides, it hurts.

Now then, if we have to produce a plus contoured filling to get the same result as nature does with in some cases an almost straight line, you can see it is simple enough that tooth enamel is very highly polished, and as we can only try to imitate nature in her perfect work, let us take a little more time and polish our fillings. I believe our patients will appreciate our work more, and in the end the profession will be elevated and bettered in a great many ways.

In finishing a filling in an anterior tooth, I have never had to use a separator of any kind, except a piece of orange wood gently used, to get a thin strip through the first time, and that rarely. In selecting strips one can get a thin, coarse one, and cut off all surplus gold, then take a strip that is worn and somewhat smooth, cut out scratches and polish with crocus paper strips; now, these strips break easily, but after one gets the knack of handling them they can produce a mirror-like finish quicker than with any other strip I have seen. There is a chamois disc with a celluloid back which is the best thing I know of for all places where it can be used, as it takes out the slight scratches of crocus paper, polishes so smooth that with a magnifying glass one can distinguish *nothing* but a smooth surface. In cervical cavities I will invite your kind attention for a few minutes. Will you please call to mind the number you have seen where the margins particularly, and the filling in general, was not polished as it should have been; what do you see? Just note the effect on the gum.

It is impossible to finish these fillings by any other method than with discs, and if you polish these fillings as they should be, the gum will grow up over the filling and resume its normal shape, according to three years of my observation where I have had a chance to frequently observe the existing conditions.

I don't think a burnisher should be used, except with the greatest care, never allowing it to touch the tooth itself, but be sure there is gold between it and the tooth; in that way there is no fracture of cavity walls and it produces a hardening of gold-filling surface, with possibly a stretching of the same, making it tighter to a proportionate extent. A burnisher used on occusal fillings is a decidedly indicated instrument.

To finish and polish occusal fillings, I use a corundum wheel to grind away any surplus filling material, cutting enamel and filling perfectly flush and smooth. A rubber disc is better, will cut faster, more easily handled and will polish just as smooth as the best moose-hide points that can be bought. The rubber disc I speak of here is one cut out of rubber packing, having a layer of rubber on the outside of a piece of canvas; it will hold the pumice-stone and cut faster than anything else you can get.

A CASE IN PRACTICE.*

BY W. T. McLEAN, M. D., D. D. S., CINCINNATI, OHIO.

I have had presented to me a child ten and one-half years of age, in whose mouth I found four carious teeth, with the alveolar process necrosed. The mother inquiring what could be done, I advised the extraction of the teeth and cutting away of the necrosed process. Prior to the visit to my office, some dentist, who had been consulted, advised letting the matter alone so long as the child did not complain. However, the husband was worried about it, and upon the advice of a physician, the child was brought to me. I extracted the teeth, cutting away all the necrosed process I could with the forceps I use for incising roots. I tnen made use of the engine, and with a large reamer cut away the rough edges.

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*Read before the Cincinnati Academy of Dentistry.

I then injected pyrozone and rinsed the mouth with it, following this by scarifying the gums well and evacuating all the blood that lacked vitality. I prescribed a bottle of pyrozone with which to rinse the child's mouth.

A week or ten days later I found some necrosed bone left; there seemed to be something to prevent the healing. With my cutting forceps I snipped off the necrosed bone as best I could. The cuspid tooth on the right side had a large cavity in it; it was a prematurely erupted tooth. On the left side the teeth were erupted normally. The deciduous teeth were decayed.

About ten days ago I found the gum had closed over, and the second molar tooth is now erupting normally.

I consider this a fairly successful operation, and one which, I presume would come under the head of an oral surgical case. The child's health is improved. The pus which formed around those teeth was sometimes so offensive mornings the mother could scarcely endure having the child in the house, and yet her dentist told her to *let it go!* The case is an interesting one, I think—especially so because of the advice given by that dentist.

I have no doubt the two remaining molars will erupt properly, and very likely the two bicuspids also.

The premature eruption of the lower cuspid is interesting to me because I have never seen the permanent cuspids (inferior) erupted at such an early age.

The remaining teeth in the mouth are in fairly good condition.

DISCUSSION.

DR. J. W. LEAHY.—I use peroxide of hydrogen with a spray and have the patient use a permanganate of potassium wash to get rid of offensive odors. Necrosis is frequently found in children's mouths, and very often you will find roots of the temporary teeth have forced themselves through the wall of the alveolar process.

Dr. W. S. Locke.—I think many of those cases may be caused from blood poisoning or abscesses. I had a case of a man 40 years of age. He had been to an advertising dentist who extracted a tooth for him. He claims the dentist had just extracted a tooth for a lady, and proceeded to extract his tooth without cleaning the forceps, using the same instrument. Within a few weeks blood-poisoning set in, and it was a serious case in many respects. First it was serious because it *was blood poisoning;* in the second place, no one was anxious to touch it, as they did not care to get mixed up with law suits. The patient had visited various dental offices throughout the city and told his story, asking the dentists to take care of the case, and stating at the same time he was going to sue those people, etc. He finally came to me; he had learned something by that time, and decided not to say anything. I found the case in a pretty bad shape, and was compelled to extract another tooth. I called a physician in consultation, who took charge of the case to a certain extent. After the man had gotten partially over the effects of blood poisoning, I found necrosis had set in to such an extent that all the teeth from the cuspid to the third molar (first bicuspid extracted) were involved. The second bicuspid and first molar were so loose they might have been extracted with a string; the others were more sound. I immediately extracted them all. I then made an incision, laying the gum tissue back out of the way as much as possible, and chiseled out all the dried bone under anæsthesia, assisted by a physician. In a few weeks I found a recurrence of this necrosis, and had to make a second operation; but I think the second time it was successful, so far as I now know, although I have not seen the patient for a year. We took out a large portion of the inferior maxillary bone, leaving a considerable depression there. I used peroxide of hydrogen, which I now believe to have been a mistake, as I think it was too irritating. I used also permanganate of potassium, and had patient use it daily in washing out his mouth. So, we should be very careful in the cleansing of instruments, that there may be no danger of trouble from blood poisoning.

Dr. Leahy.—Three years ago, in the surgical clinic of the

Ohio Medical College, an old gentleman presented himself, in the company of his son-in-law, a man I knew. He had a tooth extracted in a college clinic in this city, and the gum did not heal. There was a previous cellulitis, with more or less necrosis, probably including the bone as well as walls of the process. He was a man of sixty years of age, who had probably smoked a pipe. I asked if he was a pipe smoker; he said yes, and he held the pipe on the left side, which was the site of the trouble. The lower centrals were loose. He came to my office. I prescribed a permanganate wash to destroy offensive odor, and put him on compound syrup of hypophosphites with iron, quinine and strychnia. I told him he must go to the hospital and take an anæsthetic, and that it would be necessary to operate. His physician told him there might be cancer. I said I could not be sure without a microscopical examination. I heard nothing more of the case, however, for many months after. A year later I saw his son-in-law on the railroad; he told me the old gentleman died that July, and for eight weeks before his death the odor was so great in the room they could hardly enter it. It takes much courage and pluck for a man who knows about these cases to take hold of them. It is a question sometimes whether a man is justified in wading into those things unless he knows the conditions, and is sure of it. Had I operated, I think it might have been a success; but there is doubt as to whether he might ever have survived the shock. However, it would only have been a question of dying a few months earlier at best.

TRANSLATIONS FROM FOREIGN EXCHANGES.

Odontalgia as a Result of Syphilitic Infection.—A street-car conductor, 35 years old, suffered from severe toothache in the superior six front teeth. The pain started early in the morning and lasted all day, but did not disturb his sleep at night. For the last few days it became very severe, and he called on his physician, who advised him to go to a dentist. An examination of the mouth did not disclose any cause of trouble, but patient insisted on having the two superior incisors extracted. As ethyl-bromide as an anesthetic should be used, an examination of the heart was made, discovering thereby a typical case of syphilitic roseola, which covered the chest of the patient. After close questioning, it was found that he suffered three months from gonorrhœa and phimosis. No extraction was made, but the patient was sent to the hospital for twenty-one days. Proper anti-syphilitic treatment relieved his former ills.—DR. BEHNKE, W. Z. M.

A CASE OF GONORRHOEAL STOMATITIS.—A man of twenty years suffered from gonorrhoea. After eight weeks, both eyes were affected with conjunctivitis, and very soon both glenoid cavities became inflamed, resulting in ankylosis. Severe inflammation of the mucous linings of the whole mouth, with pronounced fedor ex ore followed. The pus from the gums contained gonococci. Proper anti-syphilitic treatment soon relieved the patient from all symptoms of disease.—DR. JESIONEK, W. Z. M.

HEMORRHAGE IN HEMOPHYLIA.—The author has a large experience in treating hemorrhage in hemophilics, and states the following general rules for treatment of such cases: Extraction of teeth in hemophilics should always be done in the forenoon. The use of internal styptics is of little value in such cases. A too frequent use of Monsel's solution should be avoided, as there is danger of poisoning, or it may cause emboli. Next to firm pressure with gauze, a few sutures are the most effective means. Perfect cleaning of the mouth with a brush and massage of the gums is very useful.—Dr. RITTER, Z FUER Z.

CHRONIC AFFECTIONS OF THE ANTRUM AND THEIR TREATMENT.—Acute empyema of the antrum can be cured by medicinal application, but the chronic affection needs surgical interference. Till lately it was impossible to promise an absolute cure (as sometimes the frontal sinus is involved), but at present we are able to get absolutely rid of the affection if we follow the methods of Caldwell of New York, and Luc of France. The important points of the operation are as follows:

1.—Cutting of the mucous lining and the gums;
2.—Lifting of the periostium of the canine fossa;
3.—Opening of the anterior wall of the antrum by means of chisel and mallet;
4.—Careful curretting of the whole cavity by the aid of an electric lamp;
5.—Making a large opening in the nasal wall of the antrum;
6.—Introduction of a special drainage tube between nasal cavity and antrum, and
7.—Suturing the periostium with the mucous lining to prevent food from entering.

After ten days the drainage tube should be removed.—DR. MONNIER, L'ODONTOLOGIE.

DANGER OF FORMALIN IN TREATING ROOT CANALS.—The author treated a putrescent root-canal with pure formalin, using a small quantity upon a few fibres of cotton. The day after the treatment the patient complained about pain in the gums about the tooth, and an inspection verified an inflammation resulting from the formalin which had come in contact with the gums. No periostitis present. A Richmond crown was placed upon the root after further treatment with peroxide of hydrogen. About three months later the patient returned with the crown fixed to the root, in his pocket. Soon after the crown had been adjusted, he noticed that the tooth became loose and very sore, pus discharged, and finally he removed the crown with the root attached to it. The formalin cauterization had caused gangrene of the gums and necrosis of the alveolus and root. The root itself was deeply furrowed, covered with Howship's lacunæ.—DR. BLEICHSTEINER, O. U. V. FUER Z.

ABSOLUTE ALCOHOL USED IN A SEVERE CASE OF ALVEOLAR INFLAMMATION.—The patient suffered from a purulent periostitis of the left lower jaw. Only the third molar and the second bicuspid remained, which were loose in their sockets. By opening the mouth, pus escaped freely from around the teeth, the gums being highly inflamed and swollen. The two teeth were extracted in two sittings. A large evacuation of pus took place. The empty alveoli were tamponated with cotton, saturated with absolute alcohol.

The next day the dressings were removed; no pus present. The treatment was repeated for three days, the swelling subsided, no more pain, and the fifth day after the extraction the pus-formation had ceased. He was advised to use half-diluted alcohol to wash out the alveoli daily. In a week's time he reported in perfect condition.—DR. BLEICHSTEINER, O. U. V. FUER Z.

ALCOHOL AND CARIES.—At the last meeting of the German naturalists and physicians, Prof. Buckner of Munich, read a paper entitled: "Natural Immunity of the Organism, etc." In the course of his lecture he related the following facts, which are of great importance to the thinking dental practitioner: "To further illustrate the action of alcohol, I want to mention its use and effect upon a relatively small field which will, nevertheless, be of importance to a conscientious physician and hygienist. *Alcohol, if properly used, is able to arrest those stages of inflammation and infection of the pulps of the teeth, and of the dentin, which are only too well known to the physician under the name of caries.* The treatment with alcohol will not alone arrest those processes, but will, if used persistently for some, restore the already softened dentin to a hard and insensible stage; yea, it is even possible to slowly cause the formation of new dentin in place of the already broken down one. It is, of course, self-evident that such a treatment has to be done thoroughly and persistently; a few drops upon the tooth-brush will not do it, but an energetic treatment twice a day will be found sufficient. It is of great importance, that the gums will become hard and less sensitive, and lose the present inclination to bleed, which is a sign of the disappearance of the slight œdema. It is self-evident that the reason for the latter action, as well as that of the cure of the caries, is due to the increased provision of arterial blood to the teeth. Caries will be cured under the influence of alcohol in the same way as an abscess heals. Alcohol has been used as a tooth-wash for a long time. But according to my knowledge, it has never been asserted, as I do at present, that one can cure caries; and besides, the methods used, were not rational ones, but simply empirical; one did not know the reason of its use and its action, and I do believe that this is of importance for its general adoptation. I do hope, as a hygienist, that this will take place—as a remedy which cures, surely is excellent as a prophylactic."

A RICHMOND CROWN FASTENED UPON AN IMPLANTED ROOT. —About two years ago I put a Richmond crown upon a root of the second right upper bicuspid. About two weeks later the patient returned, complaining about the tooth being loose. I tried to remove the crown, the root came along with it; the crown was still solid upon the root. Root and crown were separated, the crown washed in three per cent carbolic acid solution and returned at once to its old place in the mouth, the alveolus being washed out previously with peroxide of hydrogen. The root was treated with formaldehyde, and washed out every day with $H2\ O2$ for a week, dressing the canal with cotton-fibres soaked in formaldehyde. After this treatment the root was left alone for about two and one-half months. At that time the root proved to be solid, a new Richmond crown was adjusted, and I saw the patient lately; it is worn with perfect success.—DR. BLEICHSTEINER, O. U. V. FUER Z.

IODOFORM PREFERABLE TO ESSENTIAL OILS AS A ROOT-DRESSING.—In a recent paper on the treatment of periementitis by Dr. Hirschbruch of Berlin, he speaks about the treatment of root-canals in such cases, and asks which is the best antiseptic for such purposes. The essential oils, valuable as they are for the permanent root-filling, are not useful for treatment for the following reason: A cotton-fibre dressing saturated with an essential oil is not able to take up any secretions, as the oil is insoluble in water. This is different with pure liquified carbolic acid. Such a dressing will readily take up secretions and still retain its antiseptic power. It is an advantage to add to the dressings as well as to the permanent filling an antiseptic of prolonged action. Such an antiseptic is iodoform. Results in regard to its anti-bacterial power as obtained in the laboratory have proved to give negative results, and still, clinical results show it to be invaluable. The antiseptic power is probably not due to the iodoform itself, but most likely to the continuous separation of free iodine, as iodoform is readily decomposed in presence of water and oxygen. Similar conditions are found on its place of application. The continuous setting free of small quantities of iodine act as a strong disinfectant, preventing sepsis, and seems to influence the tissue-forming substances in such a manner as to act as an astringent. The action of iodoform is therefore practically the action of iodine. The direct application of iodine will not have such an action. Small quantities are not active enough; larger ones cause too great irritation. The decomposition of iodoform in the root-canals by heat, as recommended by Kirchner, is dangerous. It is the slow decomposition and the slight solubility which makes the iodoform invaluable in the hands of the surgeon.

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

SOME SUGGESTIONS ABOUT BRIDGES.

BY E. J. PERRY, CHICAGO, ILL.

I protest against long bridges or long spans. I protest against a bridge resting on the third molar below, and no intervening piers between it and the first bicuspid, especially if the antagonizing teeth above are good and strong and the first molar is elongated or pushed down because of its long lost opposition. This kind of a bridge is often seen, and in a large measure they fail and the failure is inherent in the case. These teeth are poor abutments as a rule, and the stress of mastication is too great; loosening of the roots is inevitable in two or three years. I also protest against the saddle in a general way; if the fixture is wide enough to be called a saddle I am against it, if it is very narrow and is not a saddle I favor it. If a saddle is designed by the dentist to assist in resisting the force of mastication jointly with the piers and abutments, I hold it to be an abomination, most especially in lower cases where the muscles of the cheek are partly attached to the ridge. No matter if they are perfect in fit, and are set into the tissue a trifle

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*Abstract from Dental Review.

I do not know but this is even worse. It is all very good to restore the lingual surfaces of the teeth. But the disadvantages of the case so made far outweigh this. If the saddle is a round platino-iridium wire designed for attachment of the porcelain and strength I favor it. But it probably is not a saddle. I may not care particularly if the space is not clear under the bridge. But I do not want much of the ridge permanently covered. Most especially do I protest if it is so saddled, on the theory that it will for any length of time divide with the abutments the force of mastication, and if it does not perform this service, there is no adequate excuse for putting it in. Sufficient bulk of porcelain can be had by other means, and if not, then use gold. I again want to protest against the very common practice of swinging onto a molar a bicuspid, or to a bicuspid a cuspid, or to a cuspid a lateral incisor. Only in the rarest instances is this permissible, there being no objection when the case carries two or more abutments.

COMBINATION OF GOLD AND PLATINUM.*

BY C. N. JOHNSON, D. D. S., CHICAGO, ILL.

The difference in the effect of gold upon the appearance of individuals relates principally to the temperament and complexion of the patient, as well as to an aesthetic sense on the part of the operator, which may enable him to give his fillings artistic forms. The latter consideration should be carefully studied by every operator, to the end that gold fillings in the future should not be allowed to offend so glaringly as in the past, particularly in those instances where offence is not necessary. As to complexion, it will be found that decided blondes will tolerate gold in their anterior teeth with less objection than will brunettes. In fact, the color of gold harmonizes so well with the former that if the filling is well inserted there is nothing to offend the eye at a distance of several feet. On the other hand, a gold filling in the mouth of a brunette becomes at once conspicuous and objectionable. It is completely out of harmony with the features, and should never be tolerated except under circumstances of the most urgent necessity. This necessity seldom exists, in view of the fact that we have a material at hand which makes a filling scarcely discernible in these cases at a distance of ordinary conversation. This relates to a combination of gold and platinum. * * *

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*Extracts from article in International Dental Journal.

This material makes a harder filling and one capable of greater wear than gold alone. It is also—as has been indicated—possible to produce with it fillings of varying degrees of shade which may be made to harmonize agreeably with the different types of patients which come under our hands. These degrees of shade are regulated by the percentage of gold and platinum in the given product. One preparation contains more gold than platinum, another about equal parts, while a third has a preponderance of platinum, and the color is thereby affected so as to range from a decidedly yellowish to a decidedly grayish tinge. This variation of the material may be used to striking advantage in harmonizing the filling with the features of the patient. The soft gray platinum shade falls in beautifully with the general effect in the mouth of a decided brunette, while the varying gradations from that to a light blonde may be followed with artistic results by a careful selection of the corresponding shades of material.

The combination of gold and platinum should be employed to a greater extent by the profession than it is to-day, for, while its manipulation is somewhat more exacting than that of gold, its intelligent use will lead to artistic results unattainable with gold alone, and its superior density adds greater permanence to the surfaces of all fillings which are in any way subject to attrition.

ABSORBENT MATERIALS.*

BY S. A. HACKETT, D. D. S.

Spunk, owing to its finely reticulated structure, will not absorb the thicker fluids readily. It absorbs water actively, particularly if the spunk be torn, thus opening the outer fibres.

The fibres of spunk are much smaller than paper or cotton, and instead of being arranged in straight lines or accidental curves are a mass of tightly twisted coils. When the spunk is cut in blocks, as is a common practice, these short curves are a source of danger, for any surface to which the blocks are applied will be dusted with short pieces of spunk fibre cut from the short curves that cross the line of cutting. Operators when testing for moisture while filling with gold, using blocks of cut spunk, have placed the block against the gold, and wandered why the gold did not adhere when they resumed filling, and there was no moisture; may have wondered, too, why certain fillings decayed at a point of the margin where, as a last detail to make sure of dryness, they had carried a block of cut spunk, leaving a powder of short fibres to decompose. The practice of rolling cotton or any absorbent material around in the fingers to form pellets never improves the material. If the fingers are dry, scales from the epidermis are drawn off on the pellet, and if moist the pellet becomes a failure as an absorbent.

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*Extract from article in Pacific Dental Gazette.

Both cotton and paper can be prepared with fibres running parallel and with capillary spaces running the way of the axis, rendering them a much more rapid and thorough absorbent, the ends which are applied to the surfaces being untouched by the fingers.

It is well to bear in mind that an absorbing material should absorb, and, at the same time, leave no foreign matter behind.

NOTES ON SILVER NITRATE.*

BY DR. J. MORGAN HOWE, NEW YORK.

Eight years of experience in treating teeth with silver nitrate justifies me in taking a few minutes of this meeting to state with some detail that I think the application of this salt to decaying surfaces is one of the most valuable means at our command for treating that condition.

The late Dr. Stebbins rendered the world a great service when he pursued systematic investigations into the effect of treating teeth with this substance, and gave us the results of his experiments, but the benefits to be thus obtained have not yet been appreciated by many.

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*Extract from International Dental Journal.

I have found special advantages in practice from its use, and will briefly refer to desirable results obtainable by such treatment of certain cases of decay.

In the teeth of children, including not only the deciduous teeth but the permanent molars, decay may be arrested without subjecting the child to pain or distress. The salt is also valuable in the case of the teeth of all whose conditions or necessities forbid their devoting time or energy to the process of having cavities filled.

I have treated the teeth of invalids in this way, with the result of inhibiting decay for several years, and in some cases have filled the largest cavities after the restoration of health, and have been able to note that no progress had occurred in the decay during the period of ill health.

Patients who must leave home, lacking time to have newly formed decay arrested by filling, may often have such inhibition effected by the same means without detriment. And, furthermore, certain buccal, labial, and lingual cavities have been very satisfactorily treated, in the way under consideration, in the mouths of patients irrespective of conditions of age, health, or purse.

In giving the preference to chemical over mechanical treatment I have had regard to the conditions of decay on the teeth, and to the liability of such chemically discolored places being exposed to view. Decay affecting the buccal surfaces of the molars of young people is often very superficial, but covers considerable surface, has ill-defined borders, and presents unsatisfactory indications for shaping a cavity which would be at all likely to retain a filling and prevent recurrence of decay.

The advantage of chemically arresting decay in such cases is the certainty with which the silver salts act upon all the disintegrated tissue, whether it is enamel, dentine, or cementum, converting it into a new compound which acts as a protector to the sound tissues under it. In view of the difficulty of deciding just how far to cut away sound tissue in order to include all the decayed, and the large relative amount of normal tissue that must often be sacrificed to form a cavity for filling, I have often found it an undoubted advantage to treat such cases in the manner under consideration.

RUBBER PLATES OVER METALLIC SHELL DIES.*

DR. W. K. SLATER, D. D. S.

To a representative body of dentists such as this, the advantages of metallic dies for vulcanite work over those made of plaster are too apparent for me to take up your time by enumerating them. And you will, I am sure, agree with me when I say there has been a long-felt want for something better than plain plaster casts over which to mold and vulcanize our rubber plates. This, to a certain extent, has been accomplished by treating the casts with liquid silex and such preparations, giving fairly good results, provided no wax was permitted to melt on the model.

Other methods, with which you are all familiar, have been used, and abandoned, because of their not being practical. One of these was to use tin-foil over the model; but this had the disadvantage of being hard to remove from the plate, and of making the plate just the thickness of the tin too large. And then another procedure was to adapt a sheet of thin wax to the impression and into this pour a fire-proof model, wash out the wax, dry, and pour pure tin into the mold. This was a great deal of work, and did not give a smooth polished model.

Now to try and describe a simple method that has been used in our office for some months, with a great deal of satisfaction to patients and operator. The disadvantages to the above-mentioned methods having been overcome in that we have a thin model of pure tin, supported by plaster of Paris, the tin being as easily removed from the vulcanized plate as plain plaster. The first thing to do is to get two impressions; select the better one, varnish, and set aside to dry; pour a model into the other, and over this carefully adapt a piece of Stuck's tin, thirty-two to thirty-four gauge. This is easily done with the fingers, using spunk in the foil carriers to bring to a close adaptation. I may state here that often better results can be had by cutting the tin in a place or two where it is inclined to pucker. After fitting the cast satisfactorily, you then transfer the tin plate to the other impression, which will be dry by his time. Force this into every depression and undercut, being careful not to cut holes in the tin; and to do this so as to get a perfect adaptation, nothing else is needed but a pair of office and laboratory pliers and a piece of spunk, and occasionally a ball burnisher.

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*From Dental Headlight

Now is the time to mark, remove, and cut out the overlap, provided the tin has been cut. At times the tin will be inclined to spring away from the impression. To remedy this, bend the edge directly inward, which will not only make the tin hug the impression, but serve as a fastening or hold for the plaster when the model is poured.

Remove the impression in the ordinary way, and behold you have an ideal model.

In waxing up your case, if it be an upper one, use a uniform thickness of wax over the palatal surface. I find one thickness ample, and after the case is ready for the flask, place over this another piece of tin, burnishing close to the teeth. This should come away on the counter model side when the flask is opened, enabling us to vulcanize between metallic surfaces, thereby producing a dense, tough, flexible plate of uniform thickness, with the rugae as plainly defined as in a metal plate, and the results, as a whole, such as are unattainable by any other method.

SOME THINGS EVERY DENTIST SHOULD KNOW.*

BY JOHN T. CREWS, D. D. S., HUMBOLDT, TENN.

That the sooner dentists teach the people that dentistry is destructible and subject to wear and tear, as well as everything else constructed by man in this world of fiction and decay, the better it will be for the profession.

That the people are not being educated in regard to dentistry in proportion to the number of dentists being turned out annually.

That a lower molar filled in the center of the crown without the fissures being traced out and filled is a mess, and a bigger mess if filled with amalgam too soft, with mercury floating on top of filling. If you should get a filling in this fix, absorb the mercury out with balls of tinfoil. The better plan is to work the material as dry as possible. If an amalgam filling is left soft to crystallize, the edges of the filling will curl up and pull away from the margin of the cavity and leave a leak that will soon bring your patient back to you to have the tooth "pulled." The best way of all, if your patient can pay for it, is to take Dr. J. Y. Crawford's advice and fill the tooth with gold at the beginning and save it.

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*From Dental Headlight.

That if you are looking for trouble put an oxyphosphate of copper filling on one side of a tooth and an amalgam filling on the other, and you will have all you want; and if you don't remove one of the fillings, you may be arrested for electrocuting without lawful authority.

That for sensitive dentine two doses of chloral hydrate of 10 to 15 grains each, one to be taken the evening before on retiring, and the other next morning before operation begins is better than cataphoresis, or anything else I have ever tried. Dr. Beach, of Clarksville, suggested this treatment several years ago and is entitled to the honor. I speak of it now because I do not believe it is generally known. I do not often find it necessary to use this drug, but when I do the result is always pleasing and satisfactory.

That around the lower wisdom teeth is the most dangerous place in the mouth to inject cocaine or any other poisonous drug, as the tissues at this point are so soft and yielding that an overdose is easily introduced and rapidly absorbed. I say this from observation and not on authority.

That when you are called upon to extract all the teeth of a "bleeder" you should not take all out at one sitting. Skip about in the mouth and remove one here and there, so in case you have hemorrhage you will have a sound socket, which can be easier packed and treated than a long slit in the gum. Don't use Monsel's powder, but the solution is good, though I prefer tannic acid to either preparation of iron. Internal treatment should be given in all cases of hemorrhage in connection with local treatment. Tincture of iron is good, but aromatic sulphuric acid is better. Dose six to ten drops every hour until bleeding ceases. I have never known this treatment to fail to have the desired result.

That if you will observe the first symptoms, and have your patient lie down and elevate the feet above the head, if possible to do so, you will never have a person faint in your office from extracting a tooth.

That rubber will be porous and swell up like a stuffed toad if you let the steam off while the vulcanizer is under high pressure and while the rubber is in a fused state. Gases in the center expand and the sudden cooling on the outside of the plate prevents it from resuming its original shape.

That packing your rubber with dry heat causes more cracked gum sections than anything else. Let the plaster in the flask be as dry and hard as the cast, heat by boiling the flask, and close slowly and evenly, and this mirth-provoking calamity will seldom, if ever, befall you.

That after you have varnished your impression, oil it with sweet oil, and you will have no trouble separating, and a smooth cast will be the result. This may be an old-fogy way of doing it, but it beats soap or any other new-fangled formula I have tried yet, and I am going to keep on doing it that way.

That if you know your business, never allow your patient to dictate how the work shall be done or the material to be used. If you do, you will have frequent reasons to repent of your weak backbone. Remember I say, "If you know your business," and are capable of skillful work, backed by a sound judgment and common sense.

That telling every fellow that you pull a tooth for that his was the hardest one you ever tackled may make your patient feel good and imagine himself a little tin hero, but the recording angel may be charging you up with the flagrant inaccuracies.

That it is bad taste and vulgar to wear a molar or any sort of human tooth for a watch charm, and disgustingly so if it is specked all over with fillings as specimens of your quality of work.

That when you have finished your laboratory work, and your hands are smutty and dirty, Grandpa's tar soap takes the cake to wash with.

That cones and wheels made of car spring rubber are superior to felt wheels and cones for polishing plate, etc. A small amount of water can be used, as the rubber does not absorb the water like the felt cones and saves the hands and clothes from being soiled from the flying water and pumice.

A METHOD OF MAKING ANTERIOR GOLD CROWNS.*

W. L. KINNEMAN, D. D. S., MARTINSVILLE, IND.

It is sometimes necessary, notwithstanding assertions to the contrary, to make a gold crown for one of the oral teeth. When such a necessity arises, it is important that the crown fit perfectly and is natural in shape and size. The following is one way to obtain these requisites.

If the crown is badly broken down, restore its shape and contour with some plastic material such as cement, wax, or modeling compound. Then take a plaster impression of the tooth to be crowned, and as many adjoining as is necessary to get a perfect impression of the former. On removing the impression, take a wire measurement of the root. Pack clay in the impression made by the adjoining teeth, and build a clay wall high around the impression of the tooth to be crowned, so that when a model is made it will not only show the crown perfectly, but will also show the root at the gum margin. Now pour a model of Melotte's metal. If the impression has been out of the mouth for twenty minutes and the metal is not too hot, it will not sputter when poured.

When it has cooled, remove the model, smooth and shape it with a file, and trim the cervix of the tooth until the wire measurement fits it snugly. Imbed the model half of its thickness in clay, with the lingual surface imbedded and the labial exposed. Press the clay smoothly and closely to the model and put on the rubber ring. Pour the ring full of Melotte metal. This should be quite cool, or it will fuse to the model. A little soapstone in the model will assist in preventing fusion. Next place the counter-die just poured, with the model fitting it, in the rubber ring, with the lingual or free surface of the model uppermost, and pour a counter-die of that surface. You now have the original metal model as the die, with two counter-dies, one for the labial and one for the lingual surface, fitting over it.

Use thirty-two-gauge gold for the labial surface, and if the articulation will permit, thirty- or twenty-eight-gauge on the lingual surface. Swage each half separately, trimming the edges as they need it. Finally place both pieces in position and swage with heavy blows. Remove, trim and try on the model until the edges are perfectly joined; give a final swaging to bring absolutely to shape, and solder in the usual manner.

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*From article in Indiana Dental Journal.

Some of the advantages of this method are that the die or model is direct from the plaster impression, and is accurate.

The model being of metal, it is not easily broken or marred in handling, as it would be if it were plaster.

The crown fits the root perfectly, and is of the proper shape and size, which is not always the case when hand-me-down dies are used.

TREATMENT OF PYORRHEA ALVEOLARIS.[*]

The following is an account of Dr. Harlan's clinic: The patient was suffering from slight symptoms of beginning pyorrhea, and after a thorough removal of the germinal deposits on the roots, using the "Harlan" scalers, a fine thread was passed between the teeth and drawn upwards and downwards, to locate any fragmentary deposit on the proximal sides of the roots. The sockets were then thoroughly washed with boro-glycerine water 5 per cent., and injected with acid tri-chloracetic 12 per cent. down to 7 per cent., as their severity required. This was to be repeated again in ten days. The after-treatment was to consist of an injection of

R.	Alumnol	gr. vii.
	Resorcin	gr. viii.
	Oil wintergreen	min. ii.
	Aqua dist. 140 F..........	min. lxxx.

M. S.—Inject full strength into the pockets every third day. Use a borated cassia mouth wash frequently, composed of

R.	Boracic acid	gr. xx.
	Oil cassia	min. v.
	Aq. dist....	oz. xvi.

M. S.—Agitate to make a fine emulsion before using. Massage the gums every other day thoroughly.

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[*] From Western Dental Journal.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

A SUBSTITUTE FOR COLLODION.—Dr. Bullitt calls attention to a new preparation that takes the place of collodion. It is a solution of celluloid in acetone. The celluloid is readily soluble in acetone; it will dry in a few minutes, its adhesive quality is greater than that of collodion, but it does not become very hard.

MANAGEMENT OF CHILDREN.—The cultivation of the art of managing children is very important; they require to be treated in a free and frank manner. Never deceive them or say "it won't hurt" when you know it will, and let them see everything you purpose doing. I find it of considerable interest to young patients to have some living thing in the way of a pet in the operating room. You will find that this will afford them at least one agreeable recollection which they can carry away with them.—*A. A. Mathews, in Journal British Association.*

TIN AND AMALGAM FILLINGS.—I prepare the cavity the same as for an ordinary amalgam filling. I then take a sheet of No. 4 tin foil, divide into about three pieces and roll them lightly into rope form, and then divide these pieces of rope into three or four pieces. I fill the cavity lightly with tin foil, the same as for an ordinary non-cohesive gold filling, and then press a piece of amalgam into the center and rub the foil against the cavity walls, driving the tin before the amalgam. After consolidating this layer, I repeat the process until the cavity is nearly full, when I finish with some rather dry amalgam. I have found a plug of this description to be free from shrinkage and retain a good color. I should advise a matrix for approximal cavities, as the filling must be done under pressure.—*J. S. Allen, in Journal British Association.*

PLATINA AND PORCELAIN CROWNS.—Take, for example, an upper first bicuspid with two roots. Fit two platina pins to your roots accurately; cut out a small piece of thick platina foil, say No. 3, and punch a hole in it, pass the shorter pin through the hole in the foil and press it to the root roughly, draw away together and solder. Then replace the pin in the root and burnish or hammer the foil to the root with Bonwill or other mallet; this will give the register of the other hole. Drill through this with a small drill and press the other pin into position, withdraw the whole by the pin already soldered, and solder the second pin with pure gold as before. Now fit an ordinary saddleback or shoulder bicuspid to the cap, cutting down the pins through the cap, and solder the pins of the tooth to one of the pins in the cap, then fill up with porcelain and bake.—*F. G. Mordaunt, in Journal British Association.*

SPLINT FOR REPLANTED OR LOOSENED TEETH.—The easiest made and most satisfactory splint is a thin gold one struck up to fit the two adjoining teeth. An impression is taken with modeling compound and fusible metal poured into it; a counter-die made and the splint struck up. In cementing it into place leave a portion to extend across the arch and press on the opposite teeth, so as not to give the three teeth in question all the work.—*Dr. W. H. Ryder, in Digest.*

TREATMENT OF HYPERTROPHIED GUM TISSUE.—Dr. St. George Elliott spoke of ethylate of sodium, which is a rich, red, syrupy liquid, exceedingly corrosive, which he uses apparently quite freely in the mouth in cases where hypertrophied gum presents itself between the teeth and overlapping edges of a cavity requiring filling. He applies it with a pellet of cotton. It occasions the destruction of the tissue, melting of it as it were into a gelatinous mass. Commercially it comes in the form of powder which is dissolved in alcohol. Dr. Elliott described a case of a small oral tumor which was about to be operated on, but was cured by the applications of ethylate of sodium.—*Dental Review.*

TO PREVENT CHANGE FROM CONTRACTION.—Dr. McLaren described his method of preventing change in relation of different parts on soldering by reason of contraction. He uses large round nails—or heavy round iron wire—bent to assume somewhat the shape of the piece and in case of crown for instance bending the ends up into the end caps making a sort of compensating balance.—*Review.*

ALUMINUM AND RUBBER PLATE.—The plate is of plain rubber, to which is added an aluminum lining. The doctor makes his own aluminum mixture as follows: Dissolve unvulcanized rubber in chloroform to a fluid consistency and add aluminum powder until the original rubber color is lost and the bright metallic color of aluminum prevails. After opening the flask paint the model with the aluminum mixture and then pack the case in the ordinary way. The general effect of the finished plate is one of good appearance, is more easily kept clean, and avoids the so-called rubber sore mouth.—*W. H. Fox, in The Bur.*

A METHOD OF TAKING UPPER IMPRESSIONS.—First take an impression with soft wax, and after removing cut off the wax just back of the hard palate. Now remove a layer of wax a quarter of an inch deep to within an eighth of an inch of the posterior edge of the impression and two-thirds of the way up the sides so that the wax will bind around the alveolus and across the hard palate. Now fill up with quite thick plaster, using just enough to replace the wax. Then carry on your index finger to the roof of the mouth enough plaster for excess. This will give a perfect impression—*F. H. Robinson, in The Bur.*

HYDRONAPTHOL AND OXID OF ZINC.—Oversensitive pulp, not exposed. A paste of hydronapthol with oxide powder and a couple of drops of oil of cloves and creosote is excellent practice to prevent consequent irritation that might otherwise follow the insertion of a filling. Hydronapthol in proportion of one-fourth bulk with oxyphosphate filling makes a fine non-irritating cement for a tooth previously sore from leaky filling—*Grafton Munroe, in The Bur.*

A METHOD OF FITTING A LOGAN CROWN WITH GOLD CAP.—The work consists in treating the root exactly as for the preparation of a Richmond crown; that is, cutting it flatly to the level of the gum, trimming its emerging edges parallel with the axis of the root, enlarging the root canal sufficiently to receive a Logan crown pin, and cutting retaining grooves with a round bur within the same. A gold cap is made to fit over it, and the top perforated so as to admit the Logan pin. The crown itself is then ground with a diamond disk so as to be accurately adapted to this cap. When all the parts have been fitted the canal is dried and cap and crown are cemented in their places simultaneously. Ingress of moisture, crumbling away of cement, decay of the root, and ultimate loosening of the crown are effectually prevented.—*C. T. Gramm, in Review.*

How to Obtain Accuracy of Occlusion.—In making gold crowns by the Hollingsworth system, good occlusion may be obtained by the following method: Make the band in the usual manner, swage the cusp out of thin gold, 34 gauge, solder cusp to band, and, after placing this crown in positon, instruct the patient to close the teeth firmly. This thin cusp surface will yield where the opposing teeth touch, thus making a perfect occlusion. The crown should then be removed, and solder flowed over the inner surface of cusp to give it the proper thickness especially valuable for short occlusion.—*G. H. Kittell, Western Journal.*

Warm Instruments for Amalgam Packing.—I have obtained the best results with quick setting amalgams by the use of the following method: Adjust rubber dam and prepare cavity according to the requirements of the case, and have all instruments ready to hand necessary for the completion of the filling; insert amalgam in convenient sized pieces, packing well, under decided pressure; when cavity is full, trim up, filling nicely to contour or shape with suitable plastic trimmers; smooth off with pledget of cotton rolled quite hard; then with suitably shaped burnishers used *warm, not hot*, nicely burnish all over; if this has been carefully done, the result will be almost surprising to those who have not tried this method of treating amalgam fillings.—*W. Mitchell, in Dental Review.*

To Preserve Porcelain Body after Carving.—In instances where it may not be possible to bake as soon as the work has been carved, the form can be preserved indefinitely by placing it upon a well-moistened cloth, which avoids the tendency of the porcelain to crumble away when too dry.—*H. J. Goslee, Review.*

Low Fusing Bodies Unreliable.—My own experience during those times and since is such as to warrant me in making the statement that in the whole field of prosthesis there is positively no place whatever for these so-called low fusing bodies. They are at best but a high grade of brittle, friable, colored glass, and do not possess sufficient density of strength to warrant their most conservative use. I am of the firm opinion that any "body' fusing lower than 2,000° F. should not be used for this work, because it cannot fuse lower and possess the necessary strength; hence the practice adopted by some of using the high body for the first bake and finishing with the low is detrimental, because it materially impairs the strength of the finished product.—*H. J. Goslee, Dental Review.*

The All-Platinum Crown.—The all-platinum crown for molars is sometimes indicated in bridge cases where it is desirable to leave the root as long as possible, that increased strength in the pier teeth may be secured. These may be made in the ordinary manner, excepting that two cusps are swaged in the same dies, one of which is trimmed smaller than the other, so that it will fit nicely inside of the larger one; when the two are united with solder, a good heavy thick cusp is the result, which may be still re-enforced in baking by fusing porcelain inside of them to an extent which will be admissible by the length of the root.—*H. J. Goslee, Review.*

Objections to Use of Tragacanth in Mixing Porcelain Body.—The addition of a few drops of liquid gum tragacanth to the water for mixing, as practiced by some, is entirely unnecessary, as it is only intended to aid in holding the mass together, which is observed by the manufacturers in the incorporation of a small per cent of starch in the porcelain, and too much gum tragacanth is decidedly objectionable because it acts as a flux to the body in fusing, which diminishes the preservation of fine lines and sharp angles.—*H. J. Goslee, Review.*

Caution When Using Cement for Setting Bridge Cases with Saddles.—When cement is used in mounting bridge cases with saddles, great care is necessary to avoid the penetration of the cement in between saddle and gum, as the irritating influence of same would cause much trouble. This can be overcome by using cement mixed to a fairly thick consistency, carrying it to place on the roots, then quickly removing and cleaning surface of saddle before readjusting to position.—*H. J. Goslee, Review.*

For the Pruritus of Dentition.—The *Gazette de medicine et de chirurgie* ascribes the following to Besnier:

R—Hydrochloride of cocaine	¾ grain.
Bromide of potassium	7½ grains.
Distilled water	150 grains.
Glycerin	150 grains.

M. For local application.

Care of Hands Before Touching Septic Cases.—It is an excellent idea to make a habit of washing your hands in vinegar or dilute acetic acid before touching septic cases. Slight cuts and abrasions, whose presence was not suspected, are thus revealed, and you may better protect yourself.—*International Journal of Surgery.*

Artistic Reproduction of the Natural Teeth in Porcelain.—The method the writer has adopted in such cases is to select a tooth that is larger than is required, but of the desired shade, and with a corundum wheel grind the porcelain tooth carefully, following the character of those on the plaster model until the imitation is exact; then, having previously noted any peculiarity in color or formation of enamel, these features are reproduced by means of paints or stains used for porcelain and the low-fusing bodies generally used for inlays and porcelain crowns. Where the natural teeth have a constricted neck or are much elongated, the line of demarcation between the enamel and the dentin is quite distinct, and this condition, together with the discoloration due to the use of tobacco and other causes, may be perfectly imitated by the paints and bodies. This practice is not by any means confined to the partial denture, but can be brought into use in entire dentures with the same satisfactory results.—*N. S. Essig, in Cosmos.*

Deodorizer for the Hands.—I have found that a four per cent. solution of formaldehyd will completely deodorize that most distressing odor which sometimes persists in clinging to my fingers after the tedious treatment of a putrescent pulp-canal.—*F. W. Low, Cosmos.*

Action of Formaldehyd on Metallic Substances.—The dry gas seems without action upon polished metallic surfaces; but in the presence of water bright steel is quickly attacked; hence its water solution is unfit for sterilizing instruments. For all office cuspidors as a deodorant formaldehyd solutions cannot be too highly recommended. It must be borne in mind, however, that nickel-plated ones will be attacked and tarnished by its use; 1 to 250 is the proper strength solution.—*F. W. Low, Cosmos.*

NEW PUBLICATIONS.

Facts, Fads and Fancies About Teeth. Compiled and edited by Henry Lovejoy Ambler, Dean of the Dental Department and Professor of Operative Dentistry and Dental Hygiene, Western Reserve University; Author of "Tin-Foil, and Its Combinations for Filling Teeth"; Member of the National, Ohio State and numerous other dental societies. Cleveland: The Helman-Taylor Company, Publishers, 1900.

This book, of 310 pages, is just what its title implies—facts, fads and fancies about teeth. Regarding it, the author in his Preface says: "This volume is a repository of information and amusement, as it contains many facts, queer and otherwise, concerning the teeth of human beings; also a collection of witty and humorous sayings gathered from all sources, while at home and abroad, during many years of professional life.

"We trust they may serve to entertain some weary brother during a leisure moment.

"It is the first book of the kind which has been published, so far as the writer knows, and possibly it may be the missing link connecting fact and fancy in one chart, for 'our writings are as so many dishes, our readers guests, our books like beauty; that which one admires, another rejects.'"

The subjects treated in the book are as follows: Requests for Appointments; In the Dentist's Office; The Dentist; Wit and Humor of Dentistry; Quacks; Baby's Teeth; The Mouth, Bacteria, X-Rays; The Jaws; The Toothache; Filling Teeth; Laughing Gas; Extracting Teeth; Artificial Teeth; Third Dentition, Toothless People, and Peculiar Cases; Tooth Brushes, Powders, Etc.; History of Dentistry, and Miscellaneous Items; Proverbs; Quotations: For Menu, From the Bible, From Shakespeare, Poetical, Prose; Fashions and Customs; Tooth-Lore.

Many illustrations throughout the book add to its interest. It is a work that every dentist should have on his reception-room table, for it will always interest and amuse patients as well as the dentist himself.

It is just the thing for relaxation, to drive away care, make you forget your troubles, and to keep you in good humor.

The book is well printed, neat in arrangement, and tastily bound in gray cloth, with a strip of lilac ribbon, the emblem of the dental profession, across the corner of the first cover.

The publishers and author are to be congratulated on the general appearance and make-up of the book.

It may be purchased from the publishers, the Helman-Taylor Company, Cleveland, O.

TRANSACTIONS OF THE NATIONAL DENTAL ASSOCIATION. Including proceedings of meeting at Niagara Falls, August, 1899, and of the Southern Dental Association—branch of the National—held at New Orleans, La., February, 1899. Philadelphia: S. S. White Dental Mfg. Co., 1900.

These transactions make a book of over 700 pages, and a volume of great value. The last meeting of this Association at Niagara Falls was the best in its history, and many valuable papers were presented. All of these, and also all papers presented before the Southern Dental Association at New Orleans, in February, 1899, are included in the work.

Of the valuable papers presented, the following are worthy of special mention:

The Roentgen Rays, by C. Edmund Kells, Jr.; Cements, by E. K. Wedelstaedt and W. B. Ames; Susceptibility and Immunity, by G. V. Black; Management of Children's Teeth, by C. N. Johnson; Dental Electricity, by L. E. Custer; Some New Points in the Anatomy of the Face and Jaws, by M. H. Cryer; Treatment of Prognathism, by R. Ottolengui; Results that Follow Extraction of Permanent Teeth, by E. A. Bogue.

Many half-tones and other illustrations add to the value of the book. Altogether it is a credit to both the Association and the publishers.

SOCIETY.

INTERNATIONAL DENTAL CONGRESS, PARIS, FRANCE, AUGUST 8TH TO 14TH, 1900.

The following papers will be read at Paris by the under-mentioned gentlemen:

A. K. Fort, D. D. S., Atlanta, Ga.
"The Influence of the Saliva on Bacterial Growth in the Mouth."
W. A. Price, D. D. S., Cleveland, Ohio.
"The Science of Dental Radiography." (Illustrated.)
Richard Grady, M. D., D. D. S., Baltimore, Md.
"Instructing Our Patients in the Care of the Mouth and Teeth."
R. R. Andrews, A. M., D. D. S., Cambridge, Mass.
"The Development of the Enamel."
Geo. W. Cook, D. D. S., Chicago, Ill.
"A Bacteriological Study of Pyorrhoea Alveolaris."
C. S. Case, D. D. S., Chicago, Ill.
"Important Principles in Dento-Facial Orthopedia."
R. H. Hofheinz, D. D. S., Rochester, N. Y.
"Our Preliminary Educational Deficiencies."
E. H. Angle, M. D., D. D. S, St. Louis, Mo.
"The American Type of Dento-Facial Deformity."
J. E. Hinkins, D. D. S., Chicago, Ill.
"The Chemical Action of Cements in the Mouth."
I. N. Broomell, D. D. S., Philadelphia, Pa.
"The Source of Nutrition of the Dental Pulp."
T. W. Brophy, M. D., D. D. S., L. L. D., Chicago, Ill.
"Surgical treatment of Palatal Defects."
W. C. Barrett, M. D., D. D. S., Buffalo, N. Y.
"International Dental Ethics."
B. Holly Smith, M. D., D. D. S., Baltimore, Md.
Will open the discussion on education.
Jonathan Taft, A. M., M. D., D. D. S., Cincinnati, Ohio.
"Dental History."
A. W. Harlan, A. M., M. D., D. D. S., Chicago, Ill.
"Pulp Digestion."
E. R. Warner, M. D., D. D. S., Denver, Colo.
"Some Phases of Mummification."

It is expected that a few additions will be made to this list.

The following gentlemen will give Clinics:

CLINICS.

W. V-B. Ames, D. D. S., Chicago, Ill

"Some possibilities of New Process Oxyphophate of Copper."

Gordon White, D. D. S., Nashville, Tenn.

"A Compound Filling, Using in the Cavity, Tin, Abbey's Non-Cohesive Gold and Nickold's Cohesive Gold."

Joseph Head, M. D., D. D. S., Philadelphia, Pa.

"Porcelain Inlays."

Alfred Owre, M. D., D. M. D., Minneapolis, Minn.

Will prepare a step in an incisor or bicuspid and fill same with De Trey's Crystal Mat. Gold. (Solila.)

Joseph W. Wassall, M. D., D. D. S., Chicago, Ill.

"The treatment of Septic Pulpless Teeth."

Hart J. Goslee, D. D. S., Chicago, Ill.

"Porcelain Crowns and Bridge-work."

Robert Good, D. D. S., Chicago, Ill.

"Porcelain Bridge-work."

V. H. Jackson, M. D., D. D. S., New York.

"Jackson's System of Constructing Appliances for the Correction of Irregularities of the Teeth."

Levitt E. Custer, D. D. S., Dayton, Ohio.

"The Electric Oven and Electric Gold Annealer."

W. E. Griswold, D. D. S., Denver, Colo.

"A Removable Crown for the Support of Saddle Plates or Bridges."

E. K. Wedelstaedt, D. D. S., St. Paul, Minn.

"Gold Filling."—Mesio-occlusal Cavity in upper first molar, demonstrating Dr. G. V. Black's method of

First.—Cavity preparation.

Second.—Extension for prevention.

Third.—Occlusal anchorage.

Fourth.—The use of annealed and unannealed gold.

Fifth.—Method of finishing (using the Black saws and finishing files.)

Sixth.—Proper contact, also

Seventh.—The scientific application of the rubber dam, and

Eighth.—The Wedelstædt System of Measuring and its application to cavities in the human teeth."

Frank Holland, M. D., D. D. S., Atlanta, Ga.

"Cohesive Gold Filling."

T. W. Brophy, M. D., D. D. S., LL. D., Chicago, Ill.

"Surgical treatment of Congenital Cleft Palate."

There are three or four additional clinicians to be heard from.

A. W. Harlan, *Chairman.*

W. E. Griswold, *Secretary.*

RECEPTION COMMITTEE APPOINTED BY THE MANAGEMENT OF THE INTERNATIONAL DENTAL CONGRESS AT PARIS.

The following named gentlemen constitute a reception committee for looking after the welfare of residents of the United States attending the dental congress.

Dr. du Bouchet, President, 8 Boulevard des Capucines; Dr. Roussell, Secretary, 74 Boulevard, Haussman; Drs. Barrett, Bogue, Crane, Daball, I. B. Davenport, W. Davenport, Fay, Gires, Hotz, Lie, Levett, Meng, Georges Ryan, Jean Ryan, J. H. Spaulding and Diloa.

INDIANA STATE DENTAL ASSOCIATION.

The Forty-second Annual Meeting of the Indiana State Dental Association will take place at Indianapolis, Tuesday, Wednesday and Thursday, June 19th, 20th and 21st. The Denison Hotel will be headquarters. All papers will be read and business sessions will be held in the Indiana Dental College, corner of Ohio and Delaware streets, adjoining the hotel. Clinics will be held at the Central College of Dentistry, corner of Ohio and Illinois streets. You are cordially invited to attend. Following is the program:

PROGRAM.

TUESDAY, JUNE 19TH, 1900.—10 A. M.

Meeting called to order.

President's Address ....Dr. M. A. Mason, Ft. Wayne.

Adjournment for payment of dues and the reception of new members.

2 P. M.

Reports of Committees.

Paper—"Orthoform and Nirvanin"........Dr. R. A. Adams, Clinton, Ind.

8 P. M.

Paper—"The Specialist and the Fifth Pair of Nerves............ ....D. A. Thompson, M. D., Indianapolis.

Social Session—German House.

N. B.—The German House is situated at the southwest corner of Michigan and New Jersey Streets.

WEDNESDAY, JUNE 20TH, 1900.—9 A. M.

Clinics.—Central College of Dentistry.

2 P. M.

Paper—"Lower Impressions"............Dr. C. F. Green, New Albany.

Paper and Table Clinics—"Non-cohesive Foils"....................
...............................Dr. J. R. Callahan, Cincinnati.

Election of Officers.

8 P. M.

Paper—"Æsthetic Dental Prosthetics"..Dr. Geo. E. Johnson, Ft. Wayne.

Paper—"Compressed Air".............Dr. W. A. Heckard, Indianapolis.

Thursday, June 21st, 1900.—9 A. M.

Clinics.—Central College of Dentistry.

2 P. M.

Paper—"Cocain and Eucain".............Dr. B. B. White, Terre Haute.

Paper—"Solila Gold"....................Dr. D. L. Stine, Indianapolis.

Paper—"Offensive Breath"................Dr. S. M. Cummins, Elkhart.

8 P. M.

Paper—"Diagnosis of the Dentist Himself"......................
.......................Dr. Oswald M. Brown, Terre Haute, Ind.

1. Dr. T. W. Brophy, Chicago.—"Oral Surgery."
2. Dr. W. V. B. Ames, Chicago.—"Some of the Possibilities of the New Process Oxy-Phosphate of Copper."
3. Dr. Grafton Munroe, Springfield, Ill.—"Some Uses of Hydronapthol."
4. Dr. C. H. Rosenthal, Cincinnati.—"Orthodontia."
5. Dr. W. D. Hulick, Cincinnati.—"Broken Facings on Fixed Replacement."
6. Dr. M. F. Ault, Indianapolis.—"Six Normal, and Six Abnormal Root-Canals, Each with a Different Filling-Material and Appearance Under the Magnifier."
7. Dr. J. O. Byram, Indianapolis.—"Snow Face-bow in Taking a Base-plate Bite."
8. Dr. Alex Jameson, Indianapolis.—"Pressure Anæsthesia."
9. Dr. W. A. Heckard, Indianapolis.—"Clinical Demonstration of Nitrous Oxide, Oxygen, and Compressed Air."
10. Dr. E. E. Reese, Indianapolis.—"Porcelain In-lay."
11. Dr. F. C. Green, New Albany.—"Lower Impressions."
12. Dr. M. H. Chappell, Knightstown.—"Treating Pulpless Teeth, using the solution of N. K."
13. Dr. C. E. Erwin, Terre Haute.—"Cast Gold Fillings from Models."
14. Dr. T. A. Goodwin, Warsaw.—"Porcelain In-lay."
15. Dr. F. M. Bozer, Logansport.—"Pressure Anæsthesia and Immediate Root-canal Filling in Anterior Teeth."
16. Dr. F. J. Prow, Bloomington.—"Oxy-phosphate of Copper Cement."
17. Dr. N. W. Hiatt, Marion.—"Porcelain-faced Gold Crowns."
18. Dr. Jesse McGee, Rushville.—"Modeling Compound Impressions."
19. Dr. C. W. Throop, Muncie.—"Dentenax Tooth, and Model of Set of Teeth, without Plate, with Crown Attachments."
20. Dr. J. M. Teall, Kendallville.—"Changing Shape and Color of Porcelain Teeth."

21. Dr. H. R. Isenhower, Bloomfield.—"Dr. Angle's Appliance, Using Plaster-casts."
22. Dr. J. F. Werner, Elkhart.—"Pressure Anæsthesia."
23. Dr. G. E. Johnson, Ft. Wayne.—"Logan Crown with Gold Attachment."
24. Dr. J. S. McCurdy, Ft. Wayne.—"Will show Cases in Orthodontia."
25. Dr. W. W. Mungen, Ft. Wayne.—"Logan Crown with Special Gold Attachments, and Showing the Prothere Investment."
26. Dr. W. P. Crowell, Monticello.—"Clinic Promised."
27. Dr. H. A. Moyer, Kendallville.—"Clinic Promised"
28. Dr. H. J. Goslee, Chicago.—"Table Clinic."
29. Dr. A. G. Johnson, Chicago.—"Cleavage of Enamel Preparatory to Crowning, Using Instruments of Clinician's Own Design."

NATIONAL DENTAL ASSOCIATION MEETING AT OLD POINT COMFORT, VA., JULY 10-11-12, 1900.

Partial Program.

SECTION II.—DENTAL EDUCATION, LITERATURE, ETC.

"Our Dental Educational System," Dr. M. F. Ault.

SECTION III.—PAPERS AND ESSAYS.

"Grinding the Natural Teeth for the Purpose of Contouring the Interproximate Space and Improving Point of Contact," Dr. Lawrence P. Leonard; "Treatment of Root Canals" (two papers), Dr. Jules J. Sarrazin and Dr. A. E. Webster; "Porcelain Inlays," (two papers), Dr. J. E. Wilkinson and Dr. Joseph Head; "Some Suggestions in the Treatment of Teeth," Dr. A. C. Brewer. Other papers by Dr. C. N. Johnson, Dr. E. C. Kirk, and Dr. E. K. Wedelstaedt; subjects not announced.

SECTION III.—CLINICS.

"Treatment of Pyorrhea Alveolaris," Dr. Howard T. Stewart; "Use of Mann-dynometer and Gnatho-dynometer," Dr. G. V. Black; "Porcelain Crown and Bridge Work," with models, Dr. H. J. Goslee; "Implantation as a Radical Cure for Pyorrhea Alveolaris" (illustrated with skiographs), Dr. Jas. E. Keefe; "Cavity Preparation," Dr. C. N. Johnson; "Gold Inlays," Dr. W. V. B. Ames; "Method of Combining Cement and Amalgam for Filling Teeth," Dr. L. C. Taylor; "Dentenax Teeth for Crown and Bridge Work," Dr. R. C. Brophy; "Jenkins Porcelain for the

Production of Buccal Faces for all-gold Crowns," Dr. George Evans.

SECTION V.—ANATOMY, PATHOLOGY AND SURGERY.

The Chairman of the Sections selects the subjects upon which papers are to be presented, and names the essayists. He has prepared for this year the following program:

ANATOMY—"Source of Nutrition of the Dental Pulp," Dr. A. O. Hunt; "The Evolution of the Bunodont from the Haplodont Forms of Teeth," Dr. A. H. Thompson.

PATHOLOGY—"The Pathological Changes in Pyorrhea Alveolaris," Dr. M. L. Rhein; "Oral Manifestations of Syphilitic Infection" (illustrated by the stereopticon), Dr. W. C. Barrett.

SURGERY—"Surgical Treatment of Fracture of the Maxillæ," Dr. J. S. Marshall; "Antiseptic Surgery of the Face and Mouth," Dr. W. H. G. Logan.

RESOLUTIONS REGARDING DR. J. N. CROUSE AND THE DENTAL PROTECTIVE ASSOCIATION.

Adopted by the Illinois State Dental Society, at Springfield, May 9, 1900.

In view of the recent activity on the part of the International Tooth Crown Company, their agents and allies, both in and out of the profession, and the appearance at the same time in some of the dental journals of articles reflecting on the management and tending to destroy confidence in the Dental Association, the Illinois State Dental Society, in the Thirty-sixth Annual Meeting assembled, deems it most opportune at this time to again put on record its confidence in and loyalty to the Association and its management, which has made of it such a wall of protection to the entire profession.

This Society desires also in the most emphatic manner to express its confidence in the personal integrity of Dr. J. N. Crouse, and hereby records its deep appreciation of the unselfish personal sacrifices that he has so freely made, for so many years, for the good of the cause.

This Society considers the cause of the Dental Protective Association the cause of the profession, and it condemns as inimical to the interests of the entire profession the circulation of slanders by traveling men or the publication of articles that are calculated to weaken the hands of those who are fighting our battles and to put weapons into the hands of our enemies. And this Society hereby calls upon all those who have the good of the profession at heart to give the Dental Protective Association a most cordial and unqualified support, and counsels them to show in no uncertain way their utter disapproval of all those who give aid and comfort to the common enemy.

(Signed.) C. B. Rohland,
E. K. Blair,
J. G. Reed,
Committee.

NEW JERSEY STATE DENTAL SOCIETY.

The thirteenth annual meeting of the New Jersey State Dental Society will be held at the Auditorium, Asbury Park, N. J., at 10 a. m., Wednesday, July 18th, continuing on the 19th and 20th.

Five excellent papers by well-known dentists have been secured, and, as usual, the features of the clinics on oral work, prosthetic dentistry, electrical furnace porcelain work, gold crowns, bridges and allied subjects will be interesting to instruct and please all members and visitors.

The exhibits in the large hall of the Auditorium will be the largest and most comprehensive ever attmpted by the society.

The clinics will be under the personal supervision of Dr. Frank L. Hindle, of New Brunswick and aides, and the exhibits under Dr. F. Edsall Riley, of Newark, and aides.

The headquarters will be at the Hotel Columbia, adjoining the Auditorium, with rates of $2.50 and $3.00 per day.

The profession generally are invited to participate.

Charles A. Meeker, D. D. S., Secretary.
Herbert S. Sutphen, D. D. S., Assistant.

SECTION III.—NATIONAL DENTAL ASSOCIATION.

At the last meeting of the N. D. A. it was decided by Section III. to make the work of this section a feature of the meeting.

To this end it has been arranged to hold the meetings of this section at such times as will not interfere with the general sessions. *All papers* upon the subjects embraced in this section will be read in these meetings, excepting two or three which from their general interest have been selected by the committee for presentation to the general body.

A suitable room will be provided and the program for each meeting duly announced. Some good papers are promised.

It was further decided to hold clinics. These will comprise operations upon patients, and demonstrations upon casts, models, etc. It is desired that everyone who has anything new, original and helpful will bring or send his appliances, models and illustrations. While new appliances may be shown subject to the provisions of the constitution, nothing can be offered for sale. Suitable provision will be made for the carrying out of these clinics.

Let everyone interested in this section who has anything to offer communicate at once with

Thos. E. Weeks, Chairman,
Dayton Bldg., Minneapolis, Minn.
Jno. I. Hart, Secretary,
118 West 55th St., New York.
or Thos. P. Hinman,
Chairman Clinic Com., Atlanta, Ga.

ILLINOIS STATE DENTAL SOCIETY.

List of officers elected for the ensuing year at the Thirty-sixth Annual Meeting, held in Springfield, May 8-11, 1900:

President, J. G. Reid, Chicago; Vice-President, M. L. Hanaford, Rockford; Secretary, A. H. Peck, 92 State street, Chicago; Treasurer, C. N. Johnson, Chicago; Librarian, J. T. Cummins, Metropolis City; Executive Committee, C. R. Taylor, Streator; Committee on Science and Literature, A. W. Harlan, Chicago; Committee on Art and Invention, H. J. Goslee, Chicago; Supervisor of Clinics, J. E. Hinkins, Chicago. Members of Executive Council (terms to expire 1903—C. B. Sawyer, Jacksonville; M. L. Hanaford, Rockford; C. B. Rohland, Alton. Board of Examiners—C. M. Robbins, Carthage; C. C. Corbett, Edwardsville;

S. F. Duncan, Joliet. Committee on Ethics—C. B. Sawyer, Jacksonville; J. D. Nicol, Peoria; Edmund Noyes, Chicago.

DENTAL COLLEGE COMMENCEMENTS, 1900.

Chicago College of Dental Surgery.	147	graduates.
Northwestern University Dental School.	182	"
Kansas City College of Dental Surgery.	25	"
Missouri Dental College.	30	"
Marion-Sims College, Dental Dept.	25	"
Dental Dept. University of Omaha.	10	"
Colorado College of Dental Surgery.	11	"
Cincinnati College Dental Surgery.	32	"
Illinois School of Dentistry.	22	"
Ohio College of Dental Surgery.	62	"
Ohio Medical University, Dental Dept.	42	"

CENTRAL DENTAL ASSOCIATION OF NORTHERN NEW JERSEY.

At the annual meeting of the Central Dental Association the following officers were elected for the ensuing year:

H. S. Sutphen, D. D. S., President, Newark; T. G. Gregory, D. D. S., Vice-President, Newark; N. M. Chitterling, D. D. S., Secretary, Bloomfield; Chas. A. Meeker, D. D. S., Treasurer, Newark.

Executive Committee—J. S. Vinson, D. D. S., Newark; F. L. Hindle, D. D. S., New Brunswick; C. W. Holbitzell, D. D. S., Jersey City; J. W. Fisher, D. D. S., East Orange; P. G. Voegtlen, D. D. S., Madison.

THE CHICAGO DENTAL SOCIETY.

Officers of The Chicago Dental Society for 1900-1901, elected at the annual meeting, are as follows:

President, Geo. W. Cook; First Vice-President, Geo. B. Perry; Second Vice-President, H. J. Goslee; Secretary, Elgin Mawhinney; Corresponding Secretary, C. S. Bigelow; Treasurer, A. B. Clark; Librarian, H. W. Sale; Member Board of Directors, J. E.

Hinkins, Board of Censors, W. V.-B. Ames (Chairman), C. N. Johnson, A. W. Harlan.

ODONTOGRAPHIC SOCIETY OF CHICAGO.

The following officers were elected at the annual meeting of the Odontographic Society for 1900:

President, T. L. Gilmer; Vice-President, L. S. Tenney; Secretary, F. H. Zinn; Treasurer, G. N. West.

Board of Directors—J. E. Nyman, term expires 1901; A. B. Allen, term expires 1902; G. B. Perry, term expires 1903.

Board of Censors—A. G. Johnson (Chairman), F. E. Roach, J. B. Dicus.

WISCONSIN STATE DENTAL SOCIETY.

The thirtieth annual meeting of the Wisconsin State Dental Society will be held at La Crosse, Wis., July 17, 18 and 19, 1900. A cordial invitation is extended to all members of the profession to be present.

W. H. Mueller, Secretary,
21 W. Main Street,
Madison, Wis.

OUR AFTERMATH.

A Four Years' Dental Course.—The Regents of the University of Michigan met at Ann Arbor, May 17th, 1900, and decided to make the dental course one of four years. This will go into effect a year from next fall. Under this new arrangement the first year will be given to medical studies, with no practical dental work. Practical work in the laboratory will begin the second year. The regents also voted a sum of money to be expended in refitting the laboratory. We are glad to note that Michigan University has taken this advanced step. Will the other colleges follow suit?

Mrs. A. F. Emminger, Dead.—The estimable wife of Dr. A. F. Emminger, Columbus, O., died at their home in that city on May 14th. The remains were taken to Evansville, Ind., for interment. Regarding the funeral the Evansville News Says: "Rev. Dr. John Davis had charge of the services and the beautiful burial ritual of the Episcopal church was observed. The attendance was quite large, the deceased having many friends in this city, where she had frequently visited. Mrs. R. C. Wilkinson and Mrs. Ed. N. Viele are her sisters. The flowers sent by loving friends were of great beauty and profusion. Many pretty offerings came from outside the city, from Columbus, O., Indianapolis and Chicago. One of especial beauty was presented by the Evansville Dental Association. The local dentists attended the funeral in a body out of respect to Dr. Emminger, who is one of the most prominent dentists of the country. He is president of the Ohio State Board, and an honorary member of the Indian Dental Association. The burial was private at Oak Hill. Mrs. Emminger was a lady of the sweetest disposition and to know her was to love her. She had a kind heart and was noted for her deeds of charity. One of her last acts before her fatal illness was to visit a little colored child in Columbus, O., who was ill, for the purpose of giving aid." We extend our heartfelt sympathy to Dr. Emminger and daughter in their great affliction.

MARRIAGEABLE MUTUAL BENEFIT ASSOCIATION.—A unique insurance association has been organized at Champaign, Ill., where five bright young men have formed "The Marriageable Mutual Benefit Association," with headquarters in that city. The object of the organization is to provide a fund upon which newly married couples can begin housekeeping. It being a mutual concern, the rates are merely nominal. Thirty dollars, in payments of $5 a month, is demanded of each male applicant, and the dues after a person is initiated into the lodge are fifty cents a month until the marriage of the member takes place. No examination is required upon entrance as to whether the applicant has matrimonial designs, but no benefits are paid until a member has been in the lodge eighteen months. Upon the presentation of his marriage certificate, dated the required time after joining the organization, a member is paid $250. This sum is also paid his heirs, should he die while holding a membership in the lodge. Letters of incorporation were issued to the association on April 30th. The officers are: M. L. Williams, D. D. S., President; E. M. Lusk, Secretary; A. J. Williams, D. D. S., Treasurer; J. W. Cleaveland, Head Deputy; C. R. Jungerich, Attorney. The incorporators are all young men, well known in the business circles of the city. The success of their plans is watched with considerable interest and sympathy by their friends. The objects of the organization, as stated in the charter, are: "To raise the youth of our land to higher ideals; to encourage good citizenship; to provide pecuniary means to its membership; to assist them in laying up a saving so that when they reach the important step which takes them into matrimony, they may do so with the full knowledge that a home will be assured to them; to give all moral and material aid which its members justify in a financial way to obtain for themselves a home." Dr. Williams says that already hundreds of applications have been received for membership.

REMEMBER the National Dental Association meeting at Old Point Comfort, Va., July 10-11-12, 1900.

THE

OHIO DENTAL JOURNAL.

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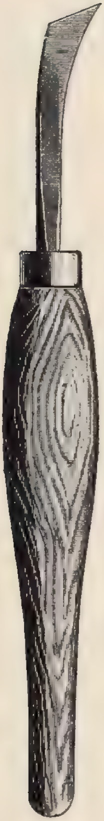
CONTRIBUTIONS.



A NEW PLATE GRAVER.

BY DR. W. H. SPAULDING, BEDFORD, OHIO.

The tool which I present for your consideration is especially designed for festooning and cutting out between the teeth on vulcanite plates having a facing of pink rubber.

Festooning is an important feature in vulcanite work, and I have used many devices for the purpose, but with more or less dissatisfaction, until, through necessity, I devised the form of graver here presented. This has been all that I could desire. It does the work quicker, cleaner and smoother than any tool I have been able to find. It is easy to manipulate, reversible, so that it reaches all spaces, and leaves the rubber between the necks of the teeth smooth and ready for the polishing lathe.

The curve in the blade is tempered nearly the whole length, which permits long-continued grinding and still retain the angle at the cutting edge. The shape of the handle affords a good grip. The illustration here presented is not more than two-thirds actual size.

To use this graver I usually hold it as one would a metal graver, resting the thumb of the right hand on the plate held in the left hand, and with a pushing motion carry the cutting edge of the tool up around the tooth, festooning the gum, then down between the teeth, cutting out all rubber not needed. The surface left from the cutting is smooth and ready for finishing at the lathe. The tool is reversible, being ground from both sides to an even angle. "I have tried it enough to satisfy me that it is the best tool for the purpose ever made," writes Dr. L. P. Haskell, and I hope the members of the profession may be benefited by it as I have been.

THE USE OF SULFURIC ACID IN THE TREATMENT OF ROOT-CANALS.*

BY M. H. EVANS, D. D. S., TOLEDO, O.

Sulfuric acid is an oily looking heavy liquid, without color or odor, but having an intensely acid caustic taste. It has a strong affinity for water. Internally it is a powerful tonic, an antiseptic and refrigerant. Externally it is used as a caustic. One of its compounds, aromatic sulfuric acid, is an astringent and for a long time has held a place in dental materia medica in the treatment of diseased gums.

It will be the object of this paper to present a few thoughts for discussion from my own experience and that of others in the use of sulfuric acid in various strengths in the treatment of root canals.

Perhaps to no other subject has as much space been devoted in our dental journals, as to this operation which so often ends in failure. Most of us have our pet theory to advance, both in our mode of operation and the agents we use. I will not say as I have heard many assert that they have no failures, the failures usually fall into the hands of the other fellow, but I will say that in the treatment of root canals in septic condition, and for opening up those fine tortuous canals we so often have to deal with, I get more satisfactory results from the use of sulfuric acid than any other agent. For instance, we are called upon to treat a tooth, the nerve of which has died, abscess has followed and the contents has discharged through the gums. After applying the dam, and I think this precaution should always be taken, remove as much of the contents as possible by careful instrumentation and the use of peroxide of hydrogen; introduce, by means of cotton on a broach or the syringe, a twenty per cent solution of the acid and pump, if possible, into the area of the abscess. This will sterilize the root canal, as no germs can live in its presence, at the same time, it being corrosive and astringent (quoting Prof. Garretson); it will break down and destroy the diseased tissue at the end of the root, leaving a fresh clean field for nature to take care of itself, with the assistance of milder antiseptic treatment.

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*Read before the Toledo Dental Society, May, 1900.

As to the effect of the acid solution on the bone tissue surrounding the roots, Dr. Geo. Pollock says, "dilute sulfuric acid does not affect the living, acting chemically on diseased bone alone." This may seem rather heroic treatment, but experience has proven that there is little or no danger of injuring the tooth or surrounding tissues, if carefully used. Its action can be stopped at any time, by the use of a saturated solution of bicarbonate of soda.

Now, we have to deal with the buccal roots of an upper or the anterior root of a lower molar, into which we cannot introduce the finest nerve broach. Place a pledget of cotton, saturated with fifty per cent solution of the acid into cavity, leaving it for twenty-four to forty-eight hours; on removing the cotton you will find a clean white surface with a dark spot, indicating the opening and making it possible to introduce the broach and more of the solution. This can be repeated until the apex is reached. The acid attacks the tooth substance vigorously, breaking up the lime salts, forming a new compound and establishes a barrier to further action of the acid. Dr. Cassidy, in his text-book on Dental Chemistry, says: "The acid attacks the earthy portions, forming insoluble calcium sulphate and at the same time dehydrating the animal or gelatinous portion, which is made up of carbon, hydrogen, and oxygen; these two latter elements are withdrawn, as already alluded to, leaving the indestructible carbon as a residue, to be incorporated with the insoluble sulphate, producing this, a protecting covering to the unaffected parts beneath against further inroads, both of the causing agent and other solvents."

It is, therefore, self-limiting or under perfect control by the use of an alkaline solution.

I have frequently used a twenty-five per cent solution in removing a small portion of live nerve near the apex very successfully. In a recent paper by Dr. Callahan, read before the Indianapolis Society, he speaks of removing a broken broach in the following manner: The canal should be filled with the acid solution and a solution of bicarbonate of soda, placed in the pulp chamber. As the alkali works its way root-wards, successive explosions of carbonic acid gas will occur until eventually the gas will be formed by the action of the alkali on the acid beyond the broken broach and the latter will come up into the crown cavity in a boiling mass of matter—this seldom fails.

I have not gone into details in describing the use of the agent as different cases may require different strengths and more or less time to get the desired results. The operator must use his own judgment. The application of a fifty per cent solution may seem to many very heroic treatment, but we do not hesitate to use arsenic, aconite, or cocaine and many other poisonous drugs, none of which we have under so perfect control as we have this agent.

THE FINANCES OF A PROFESSIONAL MAN.*

BY W. S. LOCKE, D. D. S., CINCINNATI, OHIO.

This subject has caused a good deal of comment by all professional men, especially those in the practice of medicine and dentistry, because it is not handled in a business-like way. To begin with, what are we doing business for? Is it simply for amusement, a big reputation, a certain standard of knowledge, or is it principally for dollars and cents? Had we been born millionaires, would we have taken up the practice of dentistry?

Now, if the principal aim is financial success, why should we not look after our financial affairs in a strictly business-like manner? It is generally conceded that physicians and dentists, as a rule, are not business men. Why is this so? Because they have not advanced with the merchant and manufacturer, but have followed along in the footprints of their forefathers of fifty years or more ago, and they seem to think that they must keep as far from the ways of mercantile life as possible. Now this is a great mistake. I do not mean that they should advertise, or compete with one another as do the merchants and manufacturers. The professional part of our business should be professional in every particular, and we cannot follow it too closely; but the financial part is entirely different; and while it can be carried on professionally, it can also be done in a business-like way, and there are no set of business men we could better follow than the merchants. It is a custom with the merchants to keep an accurate account in every business transaction, to give or take receipts with every exchange of money, and to keep their books in such shape that in case of death or any business trouble others may be able to settle their affairs. When the merchant makes a sale and the account is charged, his bill follows immediately after the delivery of the goods, in order that the customer may remember the transaction in every detail. Again, should this account run over sixty or ninety days, the merchant will charge interest on it, and the laws will protect him in collecting this interest, provided such terms be printed on his bill-head, and that they read so many days after date. What is thought of this merchant for being so strict in his business dealings? Does he lose his customer? Not at all; on the contrary, he is looked upon as a good business man.

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*Read before the Cincinnati Academy of Dentistry.

Now, how does the physician or the dentist conduct the financial part of his business? First of all, he is a poor book-keeper; his accounts may be tolerably accurate with his patients, but he trusts to the honesty of his dental-supply house. He keeps no expense account, no cash account; or if he does keep such accounts he has no idea as to their accuracy, because his books are never balanced. He is very anxious to have an accurate record of each and every operation; and is it not equally important that he should have an accurate record of every business transaction? Can he tell the amount of business done in a year, the amount of his profit, the actual amount of his expense, and just what part of his business has paid the best? He can guess at it, but that is all.

His method of doing business has given the public the impression that his bills are so large that he can afford to take half or less, of an account, after waiting for years. In fact, some get the idea that they need not pay at all. He trusts anybody and everybody, no matter what their circumstances; he sends the first bill to his patients six months or a year after the services were given, and renders it in such a way that it is not understood, being looked upon as large and unreasonable. And for the reason that he does not collect his money the professional man has gained the reputation of being poor pay. Again, he will render an old account for the same amount as when his services were just completed. Now, very often the patient takes advantage of this (especially if he be a wealthy man), and will use the money without paying a cent for it, just as long as he can, and instead of being your friend will be your enemy, when he is forced to pay the bill. But if this bill had had a printed notice on it reading, for example: "Interest at the rate of six per cent will be charged after sixty days," the account would have been paid within that time, and you would have retained his friendship and patronage.

Now, how is this to be corrected? First of all, the medical and dental societies should set apart evenings in each winter's session for discussing the question how to conduct a professional business. Difficulties which arise in practice as to the transaction of business, collections, etc., should be discussed, and in that manner plans for a more successful practice may be adopted. While I am not in favor of trusts or monopolies, yet I do believe professional men should form some general plan of conducting the financial part of their business, such as adopting means to compel people to pay their accounts promptly, trusting none who cannot be held responsible, and compelling those who can, to pay interest on all running accounts.

The professional man must wake up. He must take hold of advanced business methods. He must keep a good set of books, and be prompt each month in sending out bills. Each bill should have upon it at least the dates of the appointments and the number of hours given. He should charge for the use of his money, and keep his own credit A No. 1. By doing this he will know just what business he is doing, his collections will be better, and he will enjoy the credit of being called a good business man.

DISCUSSION.

Dr. Grove.—I have as much trouble in collecting bills as anyone. It seems almost impossible to get anything like ninety per cent on bills I send out. If you get right after the patients you offend them, and they tell all their neighbors and friends that the dentist does poor work, for the simple reason that you have pushed them on the financial question.

Dr. Stewart.—I would like to see an evening devoted to the discussion of business principles. I think we young men especially could profit very much by a discussion of that kind.

Dr. Heinneman.—I think the same as Dr. Stewart. The professional man has to work as hard for his money as the merchant; perhaps harder. It behooves us to adopt the plan Dr. Locke has stated to-night. Add six per cent interest to the bills if not paid on time. As I am a practitioner in the west end of the city I have a little trouble at times in collecting; but I keep after them until I have it all.

Dr. W. T. McLean.—This is a subject of more interest to the dentist to-day, perhaps, than any of the new-fangled ideas—including cataphoresis. I believe the poorest set of business men in the world are the dentists. I had, previous to my entrance into the profession of dentistry, a business education, and I aim to conduct my practice upon a business basis. I have found that our patients will hold us in higher esteem if we adhere strictly to business principles; and if a patient becomes insulted because you ask him or her to pay their bill promptly, I feel that you are better off without their patronage. I have tested this; and the way in which I conduct my practice is as follows: I treat my patients with the kindest consideration. I refer to the class of work I advise and approximately give the cost; and I also state with the highest degree of complacency what my terms are. I lead my patient to believe that I shall expect my fee when the work is completed. To-day I have $150 on my books, and this is all collectable. I have done over $40,000 worth of business in ten years, and have not lost over $100. I believe that if we could possibly educate some of our confreres they would appreciate that better than any new-fangled methods of doing our work. I can think of no better views than those expressed by the essayist. I think it a great loss to the absent members to-night in that they are missing what is so much to their interest to know. I am pleased with the paper, and wish to compliment the doctor on the short and concise way in which he has put it. I have only one correction to make, and that is with reference to the collection of interest: I do not think we ought to be in the banking business.

Dr. Gensley.—I was much pleased with the paper; and I think the dentists ought to bring more business methods into their professional life. As for myself, in the five years I have been practicing dentistry, I have not lost over twenty dollars. I try to conduct my practice on business principles as much as possible; I keep my books so they are intelligible to myself; I keep a record of each operation, and keep a cash account. In some cases I send the bill at the end of the month. I never allow a bill to run over a month unless I do part of the work near the end of one month and finish in the next month. The main thing is to give the patient the idea that you expect your money as soon as the work is done or as soon thereafter as is possible to pay it. It is seldom I have a transient patient; when they are sent by another party mutually known, I try to find out as much as I can about them before I do any work, and I think that is the reason I have not lost any more money than I have. As to offending patients by trying to collect your money, I think as Dr. McLean—if anyone gets offended because you wish the money that you have earned, the quicker they do so the better. One family I have been working for, the head of which makes a good salary, have given me some difficulty in the matter of collection; they indicated to an acquaintance of mine that I had offended them, and said to an outside party they would not have me do any more work for them. I told the party to say to them that they could not have further services rendered them by me unless they were prepared to pay for the same.

Dr. Locke.—Instead of offending people you will make friends of them by compelling them to pay their accounts. If you want them to be your enemy, let them get away without settling their account. If you compel them to pay they will think much more of you as a business man. As to the paying of cash, we all know that unfortunately business men are giving credit; consequently, dentists must do the same, and especially when we are working for families where there may be a number of children, for instance; you must wait in this case until you finish the work, and then send your bill. We find the wealthy men as a rule pay their accounts when they get good and ready. These people could be made to pay their accounts promptly by charging interest upon same. When we are dealing with people, and especially with men that have money, there should be some method by which we could either collect the cash or compel them to pay interest. Four or five per cent is good interest now, and so if we compel to pay six per cent they will not let their bills go unpaid very long. I knew a dentist in this city who had a large practice and was very strict; he wanted to know who his patients were and what they had to pay with. He has a system I think a good deal of. When he got through working for a patient his office girl wrote the name and address of the patient in a book similar to a salesman's order book, having a carbon sheet for duplicating the items; the doctor then called off what he had done in the way of services rendered; the girl would put that down, and then the doctor stated the price, the sheet was torn off and given to the patient. This suggests in the first place, paying immediately; if the patient does not do so, it furnishes them a record of what has been done on that particular visit, and the different visits are handled in the same manner. At the end of the engagements a bill is made out for professional services; the patient has the slips showing what has been done, and the amount of each charge. In some cases there may be some treatment for which no charge is made; but if the plan suggested were followed the patient would know just the number of appointments kept and just what was done. I believe we would not lose anything, but would make money in the end by doing that. There is no reason why our patients should not know just what we do for them—they should have a general idea at least. Some patients complain of their bills. They often forget about the appointments. They are honest in their belief; they do not remember what has been done. I believe when we do any work we should give the patient a record of that work then and there. When a merchant sells a bill of goods he sends his bill immediately. I worked for a patient for several months. The bill I presented was for $100. He was surprised, and did not expect the bill to be more than one-half of that amount, and called for an itemized statement. I showed him the items and he said it was all right. I believe if we adopt some plan by which the patients may know what we do for them and can check up at home without coming to see us and make complaints, we will have less trouble in collecting our bills.

DR. NEWELL GROVE.—Do you charge for appointments made when the patient does not appear?

DR. LOCKE.—I charge for each appointment missed unless the patient sends me a notice a reasonable length of time beforehand so that I can put someone else in their place. There are some exceptions where we cannot do it, but I think they are few. Patients learn to know we mean business and that they must keep their appointments. It is seldom a man misses an appointment. Ladies will miss the appointment now and then; but I think they are learning.

PRESIDENT'S ADDRESS.*

BY L. L. BARBER, D. D. S., TOLEDO, OHIO.

We are here to attend the forty-first annual meeting of the oldest Dental Association in the United States, and I want to thank you as a society for the honor you have conferred upon me by electing me to serve you as president. I am sure no one could be elected to preside over such a body of ladies and gentlemen and not be proud of it.

I want to thank the officers of this association, especially the executive committee, who have prepared this excellent program before you. To those of you who have never helped prepare a program for a meeting of this sort, I will say that it means no little work, and I want to urge upon you that at all times to give the executive committee such assistance as you can.

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*Read before the Northern Ohio Dental Society, June, 1900.

There are two or three things I want to speak of to-day. What I may say is not to be construed as personal, and I speak of them as they have appeared to me.

The older members of this and other societies have, to a large degree, been our guides, in professional as well as moral matters, and to reach the goal they picture to us, which many of them have attained, should be our aim.

While it has occurred to me that many of the gentlemen it has been my privilege to hear read a paper, or see give a clinic, have advanced ideas or shown methods that have been accepted as established and reliable facts, thereby inducing the younger members of the profession to make many mistakes that they, otherwise, might not have made. I do not believe they did so intentionally—I mention it simply as a precaution that some one may be saved the disappointments that many of us have had to bear by essayists and clinicians not making plain the difference between what they knew to be facts, and what were, as yet, experimental.

And in this connection I would recommend that the executive committee establish a clinic committee for the purpose of keeping, so far as is possible, a record of clinics, and, as far as possible, have patients report every meeting for examination of work; but I want to say to all of the younger members of this society, if you follow those spoken of, the moral part of your professional life will be up to the standard.

While we may have the advantage of the older members in educational facilities, we certainly have not in things that go to make up the gentlemen.

I want to say to the younger members of this society, when giving to this or any other society, a paper or clinic, to make plain the difference between things you know to be reliable and those that are, as yet, experimental. Remember! you are the guide of some one crossing a mountain range. Rough and jagged is the path; but it is one on which ye cannot "about face." It is forward or fail. Therefore, make the best of it and help others to do the same.

A student of one of the dental schools of Ohio said to me a few days ago, that members of the graduating class were selling their books. That seems to be one trouble with so many in our profession. They stop at the very time they have learned how to study. Work! Work! Study! Study! Think! Think! And then, when an opportunity offers to do something for this society, do it,—if to write a paper say what you have to say and then stop. Do not, for the sake of making a long paper, spoil a good short one.

STATE BOARD.

The work being done by the State Board of Dental Examiners is one that should be participated in by every member of this society. Put your shoulder to the wheel and all pull together, and then out goes the illegal practitioner, and with him many other objectional things.

It is the duty of every member of this society to help the State Board in every honorable way possible.

The question of the representation of dental surgery in the medical corps of the army and navy demands an earnest and united effort on the part of the profession, and I recommend that this society pass a resolution urging the support of Ohio's representatives in the United States Senate and House as regards this question.

I recommend that this society, if possible, take such action as will further the work being done by individuals in attempting to have more attention paid to dental prophylaxis as regards the children attending public schools in Ohio.

The matter of promiscuous dental journal advertisements has, from time to time, been seriously discussed in society meetings and always with this result—that the editors run the reading matter and hold for ethics, while the publishers run and control the advertising matters.

Therefore, I would suggest that this society take some action looking towards a comparative test of the various antiseptics and mouth preparations on the market; that an impartial report may be made, so the profession may know which are good and which are worthless.

I believe the publishers would be glad to concur in such action, but so long as we, as dentists, use samples of everything that comes along, and the journal publishers know we do, so long are they justified in advertising them, and we ought not say a word.

The laws of the National Dental Association forbid the admission of delegates from other than State societies. This, I believe, should be changed. There is now a notice of amendment to the constitution of the National Association, to be acted upon this coming July, which would make Article IV., Section 1, read as follows:

"Any permanently organized dental society may send one for every six of its members as delegates to the Association for one year, upon complying with the requirements of the constitution, but no society shall be entitled to representation that does not adopt or substantially recognize the code of ethics of this Association."

The Northern Ohio Association has for many years sent delegates to the American Association, and I believe that not one so sent from this society has brought disgrace upon the name of the American Association, or reproach upon the name of the Northern Ohio Association.

I therefore recommend that every member of the society, who is a member of the National Association, make it his business to work for such amendment. It is clearly your duty to attend the meeting at least, and, while doing your duty, do it all, and right will wrong no one.

I would suggest that all standing committees make as full reports as possible, and that gentlemen wishing to speak upon a question will, upon arising, announce their name so the chair and secretary can get it, that they may have due credit for having so spoken.

I have been informed of but one death in our ranks during the past year, Dr. S. D. Stewart, of Cleveland, O., formerly of

Akron, O. He was formerly in regular practice, and the pioneer in industrial propylaxis; but lately he has been connected with the Diamond Match Co. The necrology committee will have a full report to make.

Now, gentlemen, the forty-first annual session of the N. O. D. A. is open for business.

THE CAUSES OF DENTAL ABNORMALITIES.*

BY FREDERICK L. MILES, D. D. S., CLEVELAND, OHIO.

It is hardly necessary to state that in the consideration of variations the theory of evolution is accepted as the only rational method. A theory explaining phenomena in a reasonable manner, making the various changes of organic and inorganic matter intelligible, as well as solving many biologic, sociologic, and ethical problems, it is to-day the key to the knowable for those who do not rely on the emotions for an explanation.

The belief that all phenomena are the result of definite action and reaction of forces on matter; that the complex form and heterogeneous conduct of animal life is to be explained by those uniformities of action, which readily explain the form and motion of inorganic matter, is the position of the evolutionist.

The classification of matter into animal, vegetable and mineral being modified into organic and inorganic, and the impossibility of making any distinct line of demarcation between forms of matter possessing life and those not, of itself prompts the idea that the various phenomena common to organic bodies are only more complex manifestations of forces acting on readily responsive forms of matter. That form is capable of large modifications under the influence of the environment is certain however, and it is with these modifications as related to the teeth that we are concerned.

In the evolution of the organism teeth are formed by differentiations in the hypoblastic layer. Being dermal in origin it is reasonable to expect that in their evolution they will follow certain lines of development and variation common to dermal structures.

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* Read before the Northern Ohio Dental Society, June, 1900.

Epithelial differentiation occurs upon irritation which induces hyperaemia.

It is not necessary to assume the direct inheritance of such an acquired variation as a method of racial origin of teeth. Such variations would be preserved racially by natural selection preserving those organisms possessing hypertrophied oral epithelium, or the capability of epithelial differentiation at some postnatal time.

Presumably dentition was at first continuous and the causes of the differentiation into single and double types are not clear. When variation in form is considered we have a clue to the causes which operate. Additional cusps were produced by dichotomy. Observed as a trait of dermal appendages in general, explaining as a method paleontological researches, and complicating at the present time the dentition of some mammals, instance, the elephant, according to Talbot, it is a more probable method than concrescence.

Concrescence is supported by the occasional fusion of tooth germs. But as this is usually accompanied by degenerate stigmata or by the presence of supernumeraries, it illustrates little but the variability common to vestigeal organs.

The question as to the value of the vestigeal variability of dermal structures as an indication of their racial history is by no means answered. It is very different from the induction of Von Baer.

Irritation then inducing dichotomy the posterior portion of the mouth being subject to greatest pressure would be the seat of greatest cusp formation. Whatever other causes operated in producing carnivorous and herbivorous teeth the character of the food was an important factor.

In the evolution of the head, jaw atrophy is of great importance, being the proximate cause of many dental variations. Jaw atrophy results from the inherited effects of disuse.

This conclusion, though at variance with some authorities regarding the transmission of acquired variations, we consider certain. That jaw atrophy results as a compensatory change entailed by cranial development is doubtful. That it is concomitant to a great extent is true, but the relation between the two changes can hardly be such as to necessitate compensatory variations. The many instances of large cranial and intellectual capacity with no comparative jaw diminution tend to show this.

It is necessary to briefly consider the biologic problem of heredity. The most credible theory seems to be a modification of Darwin's theory of pangenesis. This theory assumes that from the body or somatic cells are thrown off numbers of units (as purely theoretical, however, as the atom of the physicist) which influence, not form the germ cells. These units have been variously named by different authorities, and given slightly different characteristics. By Spencer, physiological units; Darwin, gemmae; Weissman, biophers; etc.

Weissman, the most distinguished biologist denying the transmission of acquired variations, practically surrenders when in his "Germ Plasm" he admits that acquired variations may effect maternal nutrition.

Now it is evident that any somato genetic influence causing inhibition by exhaustion of body cells, which form by successive differentiations, jaw alveolar process and teeth will produce variations. And the later the differentiation the greater the liability to variation.

This will help to explain third molar variation being greater than the rest of the teeth.

Atrophic teeth are not, however, by the analogy of dermal structures consequent on disuse and partial, not acute, innutrition. Hypertrophy and excessive variation follow disuse of dermal appendages. The explanation for this is that natural selection does not control variability in vestigeal organs. That an increase of size has not occurred is due to various checks—one of the most important being lateral pressure due to crowding in the shortened jaw. Observe however that this produces more especially not general, but particular diminution in size and finally complete suppression. The lateral being caught between the permanent central and deciduous cuspid and the third molar between the second molar and ramus, are particularly liable to diminution in size.

That complete suppression from this cause does occur, and that suppression for a few generations would result in congenital absence is certain.

The modifications then from the typical mammalian dentition at present found in the marsupial, to the primate dentition, being a loss of an incisor, a bicuspid and a molar on each side has occurred principally through the effects of laterial pressure on the tooth germs. One-third appearing in unilateral cleft palate where lateral pressure is removed is a confirmation of this view.

There is a possibility that the third molar insufficiency may be aided by one of the periods of stress occurring at nearly the time of its formation. Chronic and temporary diseases of nutrition and the effects of many infantile disorders delay tooth formation and eruption, as far as the individual is concerned.

Another point of interest in considering the effects of deficient maxillary development is the production of the V and saddle arches. Dr. Talbot asserts the casual connection between the two conditions, and his conclusions have not been satisfactorily refuted. Most irregularities result then from this lack of co-ordination in jaw and tooth variation.

As asserted, irregularities may result many times from the mutually exclusive heritages of various inequalities in parental form. It has been the opinion of some that the early correction of irregularities would "stamp out" the condition. This seems improbable as the causes are in no way altered by regulative procedures. And of cases seemingly proving the affirmative, the absence of proof that the "stampout" has not resulted from variation in ante-natal factors would render the evidence next to worthless. The fact that many peculiarities of individual tooth form are observed through successive generations is to be explained not by direct inheritance of the condition by any impression through somatic cells on germ cells but by the operation of the causes indicated, viz: dichotomy, lateral pressure, and coincident variability.

Dental variations associated and caused by general degenerate taint are most interesting. Whoever has read Lombroso's "Man of Genius," and Nordau's "Degeneracy," can not help but be observant of degenerate stigmata. Disease increases as organic complexity increases. And more, as organs become useless and are being eliminated they induce disorder as instance the appendix, third molar, etc.

Whenever by disease strain organisms lose nervous control of formative processes, various abnormalities occur. These stigmata are found most frequently in ears, jaws and teeth.

However, it will be observed many variations are indicative not of general degeneracy but only that particular degeneracy indicating progressive evolution. Unless dental variations are associated with other conditions, ear deformity, harelip, cleft palate, cranial assymetry, alveolar hypertrophy, etc., no general degeneracy can be supposed. Even a case with all ant. teeth almost perfect "peg" teeth, bicuspids very sharply cusped, molars, tricuspids, with congental absence of two bicuspids and one second molar associated with small stature and intellectual acuteness, with good family history, should not be supposed to indicate anything but a local manifestation of reversion assisted by some stress at formation periods.

TWO PROSTHETIC CASES IN PRACTICE.*

BY W. J. GREEN, D. D. S., ASHTABULA, OHIO.

During November, 1899, Mrs. B—, living in a small town adjoining Ashtabula, came to my office stating that she wished to have some teeth extracted.

Upon examination I found eight badly decayed teeth on the upper jaw. I also found an absence of the teeth in the region of the right antrum. After inquiry she stated that they had been extracted about five years. At the time that she came to my office she complained of frequent pains in the region of the right antrum. A dentist and a physician had assured her the pain would cease when the teeth were extracted.

I took them out with the patient under chloroform. The gums healed rapidly, but this pain did not cease, but became more frequent. I decided that the difficulty came from another source. Procuring the necessary instruments, I made an examination of the throat. I found under the palate a patch or inflamed condition about the size of a ten-cent piece. I concluded this was the seat of the trouble causing the pain. I gave her the address of a throat specialist. The physician wrote me and pronounced the case Follicular Pharyngitus. He also told me that many times the disease has been mistaken by dentists and physicians to be a disease of the antrum. The patient is nearly recovered of her throat difficulty, but does not wear a plate as yet.

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*Read before Northern Ohio Dental Society, June, 1900.

My second case was that of a young man who presented himself to have a plate fitted. Some six months previous I extracted all the teeth on the lower jaw with the exception of the first and second right molars. Upon taking an impression, the patient complained of pain in the region where the lower right third molar should erupt. After making a careful examination I found a tiny bony structure protruding slightly through the gum. Thinking it was a small bit of the alvolar process, I tried to remove it with an excavator, but found it very firmly imbedded. I made an incision at right angles on four sides of it and told him to call in a few days. He returned in about two weeks and the case was no better, i. e., it could not be extracted without crushing. I made incisions in the gums as before and told the patient to wait until the bony substance protruded more. At the end of a month from that time it came out with a severe pull with a root-forcep.

The only conclusion I can arrive at is a partially formed deciduous tooth with an unusual amount of exostosis at the wrong end of the tooth.

AN EXPERIENCE IN REPLANTATION.*

BY HARRY L. KING, WELLINGTON, OHIO.

The case which I wish to describe was the result of an accident in which that arch-fiend, the wire clothes-line, figured to some extent. A boy of fifteen, running at full speed, just at dusk, collided with the taut wire, which caught him in the open mouth and entirely removed the superior right central, split the labial portion of the process over the right lateral and cuspid so that the two teeth and process were held in the mouth by soft tissue only, and broke off the first bicuspid even with the gum, also carrying away a large portion of the crown of the second bicuspid.

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*Read before the Northern Ohio Dental Society, June, 1900.

It was four hours after the accident occurred when I saw the case, and the physician who had been called at first said the only thing to do was to remove the loosened teeth and root and replace with artificial denture when the mouth had sufficiently healed.

This did not seem the proper course to me, and as it was quite late in the evening, I suggested waiting until the next morning and then trying to find the missing tooth which had not been found. I believed that it could be replaced, if we could find it.

So the loosened teeth and process were pressed back as near to their proper position as possible and a piece of surgeon's adhesive plaster, extending from cheek to cheek, was placed over the lip outside to assist in approximately holding the broken section in place.

The next morning we made a diligent search and were able to find the missing tooth. I removed the pulp and filled the canal with cement, then ground the apex so as to shorten the tooth considerably and placed a gold filling in the apex end of the canal; after which the tooth was thoroughly sterilized by boiling in strong solution of carbolic acid.

The patient was placed under the influence of chloroform, the mouth and wound was cleansed and disinfected, and the central placed in its socket. We found that this tooth acted as a kind of splint to hold the lateral and cuspid with the broken process in their own proper places. A roll of sterilized cotton was placed between the gum and the lip, and strips of adhesive plaster were placed across the lip outside, and, extending well out on the cheek, held the parts in place with astonishing firmness.

The patient was quite sick during the rest of the day from the effects of the chloroform, and the next morning the cotton inside the lip was removed and a modelling compound impression was taken of the upper teeth from the right second bicuspid to the left cuspid. I also placed a quantity of the compound all around the teeth, hardened it with water, and left it there to act as a brace until I could make a hard rubber appliance.

The next day I placed the rubber splint in place, cementing it to the teeth, closed the patient's lower jaw against it and bandaged with a Barton bandage; but still kept strips of adhesive plaster drawn tightly across the upper lip. These strips were renewed every day or two. I have forgotten to mention that the mouth had been carefully sprayed with Listerine and Pasteurine several times daily ever since the operation. This was continued steadily, and I found that Pasteurine tablets, broken in small pieces so as to be taken readily, did much to disinfect the mouth and keep the stomach in good order. Malted milk was the main standby for nourishment.

In about a week's time the vulcanite splint became loosened, so we removed the bandages and replaced it. Everything was doing well at that time and in another week the bandages and appliance were removed permanently. The syringing of the mouth had been scrupulously attended to, and there had been no sloughing of gum tissue. The teeth were in good position, the only fault being that the central was a trifle longer than before, a defect that only a dentist would ever notice.

I will say that throughout the whole treatment I had the hearty co-operation and encouragement of the family and their physician. The patient also was especially desirous of success, and took great care of the mouth until everything was firm, which care I am sure contributed much to the good results.

In due time I placed a gold filling in the second bicuspid and a Logan crown on the first bicuspid root.

Now, just a word in closing: I will say frankly if I had another case similar, I should treat it differently, though I doubt if any better results could be obtained. It has not been my aim in this little article to present any method for such cases, but only to state my experience in this case of replantation.

WHAT MATERIAL FOR FILLINGS SHALL WE USE TO BEST SERVE CASE IN HAND, OR THE PROPER SELECTION OF FILLING MATERIAL.*

BY S. D. POTTERF, D. D. S., DEFIANCE, OHIO.

I believe the importance of this subject is overlooked by some of the younger men, and by not a few of the older ones in the profession. The word "filling," when used in connection with human teeth, we understand to mean the replacing of a portion of lost substance of the tooth itself. A proper and judicial selection and combination of filling material presupposes a careful consideration of all the conditions that surround the tooth to be filled.

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*Read at Northern Ohio Dental Society, June, 1900.

The physical properties and chemical nature of a filling material should be such as not to disturb the normal temperature of a tooth, nor endanger its vitality.

The three most essential qualities of a filling material, then, are: First, softness to admit of adaptation; second, hardness to withstand mastication; third, indestructibility, to resist the chemical action of the oral fluids. There should not be very much expansion, and no contraction in the filling material. A filling material must not disfigure the appearance nor produce noticeable discoloration of the tooth, especially if it be in the front mouth.

The filling materials which experience has shown to meet more or less perfectly the requirements are, gold, tin, amalgam, the zinc plastics and gutta-percha. These materials, taken in order named above, preserve tooth structure in one or more of four ways: First, all by more or less exclusion of the oral fluids; second, by a deposition of metallic oxides and salts which cover the walls of the cavity and permeate the dentine; third, by therapeutic or medicinal effects on the dentine; fourth, by their non-conducting and non-irritating qualities.

Assuming that they have sufficient anchorage, fillings fail in one of three ways: they are undermined by decay, or worn away by attrition, or disintegrated by chemical action. The relief of sensibility is of great importance.

If the dentine be extremely sensitive to thermal change, we cannot be too careful of the kind of material we place in contact with extremely sensitive surfaces. I think many of us do not guard the life of the tooth sacredly enough. We fill teeth many times (*not I*, but the other fellow, of course), and do not take the time or pains to relieve or protect those sensitive surfaces. Sometimes I have found carbolic acid alone sufficient to relieve this. I use it pure.

When this will not do the Robison Remedy, which is caustic potash and carbolic acid, will act very nicely. If the tooth be a molar and the tooth structure soft, I sometimes find great benefit from the use of a ten per cent. solution of nitrate of silver. In many places where the cavities are deep, I believe it necessary to use some non-conductor to prevent thermal change where the cavity is to be filled with a plastic, after drying the surfaces carefully, then with a warm instrument I melt the least bit of parafine over the surface, and if I wish to fill with gold, cover this surface with some good cement and finish with gold.

I think it a great mistake to sacrifice so much tooth bone as is done many times in the molars and bicupids in order to get access to fill cavity with tin or gold. Very often cavities in these teeth widen and undercut at the cervical border in the approximate cavities, making it the next thing to impossible to do good work with any foil, gold or tin, without the sacrifice of altogether too much of the tooth substance, and destroying the contour of the tooth. In such a case after cavity is cleaned, border trimmed ready to fill, I would coat walls of cavity with a medium mixture of cement and fill perhaps one-third of cavity with some good, quick-setting alloy, using a matrix; would finish with gold at same sitting (or better, at a subsequent sitting).

I believe, brother dentists, by doing this I have done my patient a greater service in this case than to have cut away the whole side of the tooth and built it up with gold. Then, again, the health of our patient must be considered; also, the age has to do in determining what materials we should use. I find in the mouths of young patients from the ages of 12 to 18, especially girls, a greater tendency to caries than in other years, owing to continual change of health, with consequent abnormal condition of the saliva; and, possibly, the failure to properly care for the teeth and mouth at this age, has something to do with it.

In these cases, where I can have the confidence and control of my patient, I fill temporarily, using some good cement if in the front teeth—if in the molars or second bicuspids tin will do better—and later when these teeth become more dense or immune from caries I fill them permanently. Of course, temporary work is done only in those cases where I expect eventually to fill with gold. When an alloy is used as the permanent filling I fill immediately. Before putting in most of my alloy fillings I usually coat the walls of the cavity with a medium thin mixture of cement, and so far as my observations go, I believe that I have saved and made serviceable a great many frail teeth in the back mouth with this kind of filling that could not have been saved, it seems to me, so well in any other way, except by crowning. I do not believe the majority of dentists give non-cohesive gold the place it deserves. At the cervical walls and against frail walls in the interior teeth, so many men in their profession are inclined to use all cohesive gold; I know men who never use anything else.

I think it is impossible to do as good work with cohesive gold as with non-cohesive gold in these places.

Now, gentlemen, I have not tried to say anything new; simply a repetition of things that you already know; but if I succeed in inducing anyone who was inclined to be a little careless along this line to be more careful, and do better work, I will be amply paid for my trouble in writing this paper.

TRANSLATIONS FROM FOREIGN EXCHANGES.

CONDUCTED BY H. PRINZ, D. D. S.

[Translated expressly for Ohio Dental Journal.]

TROPACOCAINE AS A DENTAL ANESTHETIC.—Dorn (*Odontologische Blatter*) gives the following as Vamossy's formula:

R—Tropacocaine hydrochloride	3 parts.
Sodium chloride	6 parts.
Distilled water	100 parts.

M. The solution is said not to need sterilizing and to keep indefinitely. Dorn has used it in more than three hundred cases of tooth extraction, and never witnessed any untoward effects.

MENTHOL-IODOL IN DENTISTRY.—Menthol-iodol is an improved iodol combined with a small quantity of menthol. Iodol is almost an ideal substitute for iodoform; in spite of its high percentage of iodine (89%), it is harmless. Menthol is added to increase its antiseptic value and to give to the preparation anæsthetic properties. The author has used the preparation for some time, concluding his report as follows: Used as an antiseptic in putrescent root canals, it will be readily absorbed within twenty-four hours. Teeth affected with caries of the second degree with hyperæmia of the pulp are very sensitive to thermal changes, acids and sweets. Large quantities of menthol-iodol were applied which are absorbed through the dentine; the pain will soon subside and after eight to ten applications the tooth is ready to fill. The drug has been used with marked benefit in pyorrea alveolaris; however, the cases were so few that no definite judgment can be given at present. On account of its easy absorption and its antiseptic and anæsthetic action, it is an excellent medium for treatment of inflamed and putrescent pulps of the early stages.—Dr. Guadaynini, Y. F. Z.

Idiopathic Periostitis.—By this term we understand a periostitis of the jaws, which is in close relationship to a periondontitis bub which is found upon the teeth with living pulps; an infection by means of the root-canal is excluded. There are simple and severe cases of this disease. The simpler forms are mostly the result of a false bite, or biting upon some very hard substance or salivary calculi may be one of the causes. The symptoms usually disappear after the application of tincture of iodine. Kirk describes similar cases with the formation of abscesses and claims that these abscesses are local manifestations of constitutional causes. Mostly, we are in the dark about their origin. One characteristic sign is the peculiar appearance of the pus. It differs in quantity and quality from the one usually found in abscesses after infection of the pulp. The pus is mostly mucous-like or albuminous in its character, here and there mixed with blood and not so yellow. Bacterial investigations were not made at the time, but this should be done, as it probably might help to explain the causes of idiopathic periostitis.—Dr. Treuenfels, Y. F. Z.

Tropa-cocaine as a Local Anesthetic.—Tropa-cocaine is a sure-acting local anæsthetic, relatively non-poisonous and almost with no bad after-effects. The aqueous solutions can be sterilized by boiling without decomposition. It is employed in 4 or 5 per cent solutions, using from 15 to 60 drops of the solution.—DR. DORN, *Odont. Blaetter.*

A GOLD SEPARATING SOLUTION.—As far back as 1857 the Rev. J. B. Reade made some extremely interesting experiments on the solubility of gold in the metallic state and as it exists in different ores. Ten years previously he had demonstrated that if a few drops of liquor ammonia be added to twenty or thirty grains of iodine and the compound slightly heated, the result is an ammoniacal solution which is an instantaneous solvent of gold leaf. This solution, he said, when saturated with gold, yields, upon spontaneous evaporation, four-sided prismatic crystals of ammonio-periodide of gold, which have very much the same color as iodine. At a high temperature ammonia and iodine are given off and metallic gold remains. For several years Mr. Reade continued his researches and finally, in 1897, a paper was published from which we extract the following information: "Some caution is required in forming a solution of iodine in ammonia, but with ordinary care to secure a large excess of iodine, which dissolves periodide of nitrogen if formed, the explosion of this terrible compound may be avoided. The best method is to place fifty or sixty grains of iodine in an evaporating basin, to warm it until the vapors arise, and then to add a few drops of liquor ammonia, which will be immediately charged with a large excess of iodine in solution. Gold leaf, in this solution, burns instantly black (or purple, if the solution is weak), and immediately dissolves, like sugar in water. If a drop or two of the iodine solution is spread on a piece of glass and two or three square inches of gold dissolved in it, a very slight application of heat will cause a rapid crystallization in the arborescent form. The solution of iodine in ammonia may also be successfully used in separating gold from ores where the percentage of gold is very small. From a commercial point of view, this solution might be more available than mercury, and the iodine could be easily collected and used for further experiments.

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

RECURRENT DECAY OF THE TEETH.*

BY W. D. MILLER, M. D., D. D. S., BERLIN.

Knowing the causes of primary caries and the properties of our filling-materials, the causes of recurrent caries become so apparent that we should have no difficulty whatever in finding them out. There is a very commonly accepted view that teeth filled with gutta-percha are not liable to a recurrence of caries, even though the filling may not be water-tight. This view is in part right, though it would be going altogether too far to assert that recurrent caries never occurs around fillings of gutta-percha. Various suggest themselves to me for accounting for the comparative rareness of recurrent caries around gutta-percha fillings. In the first place, these fillings do not as a rule remain as long in position as gold and amalgam fillings. In the second place, in case of a perfectly rigid filling, like amalgam or gold, a shock (blow or pressure) is transmitted to the walls of the cavity every time the filling is bitten upon, which shock will be the greater the softer the tissue of the tooth is and the less perfectly the filling is anchored in the dentin and in all parts adapted to the walls of the cavity. The tendency of these repeated blows is to produce disintegration at weak points in the margin of the cavity wherever there may be frail or partially decalcified walls of enamel. This action is absent in fillings of gutta-percha.

In the third place the effect of mastication on gutta-percha fillings, since they are seldom perfectly rigid, is to keep them pressed tightly against the walls of the cavity, especially at the most critical point—the cervical wall. Here we will usually find the gutta-percha to a certain extent overlapping the cervical margin, and thus protecting it, although it may be injurious to the gum-tissue. These fillings may be even to a certain extent self-repairing, the action of mastication forcing the gutta-percha down upon the margin of the tooth and obliterating the space produced by the recurrence of caries.

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*Extracts from an article in Dental Cosmos.

Notwithstanding all this, caries does recur around gutta-percha fillings often enough. A right upper second molar which I very carefully filled on the approximal surface with gutta-percha showed extensive recurrent caries on the lingual margin fifteen months later. Also a left upper second bicuspid filled in 1892 with gutta-percha on the distal surface, nowhere exposed to mastication, recently came to my notice showing a large cavity, nearly exposing the pulp, on the cervical margin.

My observations have convinced me that the saving qualities of gutta-percha, which have been somewhat overestimated, are not therefore to be explained by any therapeutic virtues contained in the material, or by the absence of galvanic action, but by its physical properties alone.

I have seen preparations of gutta-percha become rigid and brittle in the mouth, in which case the tooth is more liable to a recurrence of caries than when filled with gold or any other material. In fact, such fillings are often simply worthless.

Caries results from the accumulation and retention of particles of food between or in fissures, depressions, etc., upon the free surfaces of the teeth, which places we may call retention centers. If, in filling a cavity in a tooth, we do not thereby obliterate the retention center, which primarily gave rise to the decay, there is every reason to suppose that decay may make its reappearance in the course of time. As a matter of fact, the vast majority of fillings do not obliterate the center of retention, whereas, on the contrary, many aggravate it. Either the fissures have not been properly bored out and filled or the papilla is partially destroyed by wedging and in finishing the filling, or the latter is not perfectly smooth, particularly on its cervical wall; or its shape is such as to allow particles of food to readily become wedged in between the necks of the teeth, or it undergoes change of form or size subsequent to insertion, by which the liability to recurrent caries is greatly increased. Again, the union of the filling with the tooth is only a mechanical one, and very often imperfect at that, so that a ready point of attack is furnished along the margins of the cavity.

In proportion to the degree in which these conditions are present will be the liability to recurrence of caries. Only where the cavity is extended to such a degree as to place the margins outside of the center of retention and the material so well adapted as not itself to form a center of retention along its margins, can we reasonably expect the tooth to be less susceptible to caries than it was in the beginning. Operations of this character have, however, other weak points which I shall not discuss here.

The fact that recurrent caries very frequently makes its appearance at the cervical margins of approximal fillings is certainly not difficult to account for. This part of the cavity is usually most inaccessible; the margin is liable to be imperfectly prepared; the enamel is either wanting or so thin that it easily chips away during or after the operation; the filling is often less thoroughly condensed and finished; the adaptation less perfect than elsewhere.

Another point where recurrent caries frequently makes its appearance is along the lingual or buccal wall of approximal fillings in bicuspids and molars. The liability to recurrent caries is here given by allowing frail walls of enamel to stand, and by thus furthermore placing the margin of the filling within the center of retention. The narrowness of the cavity renders it also impossible to properly condense the gold against the margins.

On buccal and labial surfaces we frequently find caries, regardless of the filling-material.

In many of these cases the portion affected by the recurrent caries had already begun to disintegrate before the filling was made. We should, of course, always extend the cavity laterally as far as the enamel shows the slightest trace of decalcification, and even then we do not always remove the possibility of a recurrence of caries, any more than we can prevent the process of erosion from extending around a gold filling.

In small approximal fillings in the incisors, where the space is limited, it is very difficult to obtain a perfect adaptation of the gold to the *labial* wall; accordingly we find recurrent caries frequently making its appearance at this point. For the same reason we often find these fillings becoming defective toward the cutting-edge sooner than at the cervical wall. The same applies to very small approximal fillings in the bicuspids and molars. Here it is chiefly a question of imperfect adaptation, and the only remedy is to wedge the teeth or to extend the cavities sufficiently to admit of free access to all the walls.

Gold fillings on the grinding-surface of second and third molars will be found to fail oftenest at the mesial margin. Here, again, it is only a question of the comparative adaptation of the gold, determined by the comparative ease of access. A right-angled hand-plugger or machine mallet enables us to condense the gold as perfectly against the mesial as against the distal wall. In many cases fillings fail or become defective through the breaking away of thin walls or weak corners—of course a purely mechanical process; while in amalgam fillings the contraction or change of form of the fillings and the chipping of thin edges of enamel on the margin of the filling, and in cement fillings the gradual wasting away, are very potent factors in rendering the tooth liable to a recurrence of caries.

To sum up the whole matter, the presence, often in an increased degree, of the causes which primarily brought about the caries, together with points of diminished resistance, resulting partly from the inadaptability, partly from the imperfect manipulation of our filling-materials, or subsequent changes in the fillings themselves, furnish so apparent a solution of the cause of recurrent caries that it is not necessary to bring factors into requisition whose action has never been demonstrated.

A METHOD OF MAKING A MATRIX FOR COMPOUND APPROXIMAL CAVITIES.*

BY G. H. CLAUDE.

Take a thin ribbon saw, fold over a portion, about the depth of the cavity, and snap it off by pressure between the thumb and forefinger. This gives a slight deflection at the broken edge that serves well to fit close to the cervical margin just below the floor of the cavity, and is passed down, being guided by the surface of the tooth until just below the floor of the cavity, at the same time cutting off any growth of gum that may overhang the cavity.

*From Cosmos

This is adjusted and held in place by separating rubber, gutta-percha, or Gilbert's stopping, which serves admirably as a compress to arrest troublesome hemorrhage in cavities extending below the gingival surface, and where it is impracticable to use the rubber dam. Frequently it is a great aid in the preparation of the cavity to place the matrix in position before excavating. The rubber holding the matrix in place has the advantages over a hard resisting medium in that by its compressibility it admits of securing any desired contour, and of allowing that nice surplusage along the margins of the cavity so much desired in giving a nice finish. The degree of contour and of surplusage can be determined and regulated by the force and direction of the blow or by pressure. By drawing the temper of the steel to blue, the matrix may be given any desired shape by manipulation with the fingers and trimming with scissors. For cement fillings aluminum serves better, as the cement does not adhere to it.

Another method is by the use of metalic polishing strips. These were passed around the tooth and the two ends pinched together with pliers, folded twice, and bent down against the tooth and tightened where necessary by wedging with wood or gutta-percha.

HOW TO PREVENT THE SHRINKAGE OF RUBBER DURING VULCANIZATION*

BY J. GORDON, ST. THOMAS, D. W. I.

I found that the problem was easily solved by keeping the halves of the flask slightly apart and causing them to close automatically during vulcanization, at the period required for success.

This I effected by interposing between the halves of a Starr reversible flask, near the bolts, three disks of alloy fusible at three hundred and twenty degrees, say eighty-five pounds pressure as indicated by the S. S. White steam gauge. These disks may vary from one-sixty-fourth to one-sixteenth of an inch in thickness, according to the mass of rubber to be vulcanized. They will begin to crush at three hundred degrees, or seventy pounds pressure. I find conclusively that this is really the point at which the rubber begins to harden and has the apparent consistency of vulcanized velum rubber. Here the advantage is derived, for by fully compressing the rubber at a moment when there is no possibility of much flow, the true quantity for the case is kept *in situ*.

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*Extract from Items of Interest.

To effect this it is necessary to have the flask either in a Donham spring press, or fastened by bolts with springs under the nuts, such as are sold by Messrs. Lee S. Smith & Son.

I must explain that the case can be packed as usual, then pried open for the insertion of the disks, or it may be overpacked to include the thickness of the disks used and the result will be the same, except that the latter method will cause some waste of rubber; yet I must specially point out that bulky lower sets and some upper ones should always be packed inclusive of the thickness of the disks. Among my experiments was the vulcanization of a one and one-fourth-inch cube, composed half of S. S. White gum No. 1 and half a bow of spring rubber, resulting in a surface free from honeycomb, thus proving that in this way thick masses may be properly vulcanized within the same time as required for ordinary ones.

Among the many advantages gained may be mentioned the following:

The mounting of teeth directly over the alveolar ridge, yet insuring perfect adaptability of the plate and no rocking over the hard palate; the boon to those patients who have healthy roots and cannot afford crowns or bridge work; teeth adjusted to roots, with a rubber base vulcanized as explained above, will always retain their correct positions; the preventing of granulations and angry looking irritation of the palate caused by the efforts of patients constantly trying to exhaust the air from under chambers of ill-fitting plates.

ULCERATION OF THE GUMS IN MIASMIC FEVERS.*

BY DR. MANUEL IGNACIO POLO, DENTISTE, TRINIDAD, CUBA.

During the war in our island—our war for independence—I had the opportunity to observe its pathological effects.

The war terminated; almost all of those who took part in it were attacked by a species of chills and fever, and in the majority of revolutionists, on account of lack of medicines and food, aenemia made great progress; on account of this aenemia ulceration of the gums, fetor unsupportable, painful and difficult mastication, and slight hemorrhages, were the result.

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*From "La Revista Dental Americana."

The infirmity presented itself in the form of small ulcerations on the gums, and if not cured in time, these ulcerations attacked the throat, cheeks and soft palate.

In view of these symptoms I employed the disinfectants and astringents such as tannic acid, permanganate of potash, tincture of ratania, borate of soda, etc., and the caustics, such as iodine, sulphate of copper, nitrate of silver, etc., but none of these gave me satisfactory results, so that days and days have passed without realizing either cure or alleviation.

Among other experiments I prepared an official solution of chromic acid, crystallized—one part of acid, one part of distilled water, and afterwards diluted with two parts of water.

Before undertaking the cauterization, I prepared a concentrated solution of cocaine, and with a brush I slightly painted the affected parts, to produce slight anesthesia. Taking a fine instrument, I wrapped it with a film of cotton, and dipping this into the acid, I carefully touched the affected parts of the gums.

I repeated this operation every two days, maintaining an aseptic condition of the mouth with the following wash:

R.	Acid Boric	1	gramme
	Listerine	30	"
	Honey	20	"
	Decoction of quinine bark	300	"

In four days the patients found themselves practically cured.

Among my patients, one who had been attended a long time by a physician, became wearied and solicited my services the first of the week; by Thursday he could eat food with ease, which greatly astounded him, as he had only partaken of milk for twenty-two days.

It is my opinion that any morbid growth or affection of the mouth—excepting malignant tumors—can be cured by these therapeutic agents.

A PERFECT BACKING.*

BY DR. D. A. PEOPLES, PLANO, TEXAS.

Cut a piece of thirty-six gauge platinum somewhat longer than the tooth to be backed usually calls for. After punching the pin holes, bend back the upper and lower edges of the backing in a sharp angle, using the edge of a sharp blade of a pocket knife or any such instrument, at the same time making it assume a slightly convex shape.

When you put it in place on the tooth, you will observe that it does not go all the way to either the biting or gingival edge. Now fill in with porcelain body between the tooth and backing and bake in your furnace, being careful that none of the porcelain body is left on the outside of the platinum, but that it is filled in solidly between the facing and platinum, giving it a second or even a third baking if necessary.

You now have a tooth backed with platinum which is much thicker at the pins than as ordinarily prepared, incomparably stronger in resisting the strains which so often mar our work (as it does not depend upon the pins alone to keep the facing in place, but all is solidly fused together), and absolutely excludes all fluids.

You may add to these points of excellence the freedom of the biting edge from the "line" of gold, which is so often objected to by the aesthetic portion of the profession or their patients, and freedom from the danger of melting down the backing in the future solderings, and yet the platinum does not show through and darken the color of the facing.

With this perfectly backed tooth you now proceed, attaching it to plate, or band, or bridge, as you desire. Of course you will be careful to not allow the flux to get on the exposed porcelain between the edge of the backing and the biting edge of the tooth, but will carefully cover with the investing material, else you will be likely to crack it in soldering. If you should wish to grind away any of the gingival edge, it would be better to not grind far enough to remove the "angle" of the platinum backing. Nor is it necessary to have a flat back tooth or facing, as the plain (or a gum, if you want it) rubber one can be used just as readily.

*Extract from Items of Interest.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

INLAY WORK.—Superfine or extra superfine plaster of Paris must be used for making the moulds for inlays by our method; fine plaster is not pure enough for the purpose.—*Quarterly Circular.*

TO REMOVE IMPINGING GUM.—In the filling of cavities, where the gum overhangs the cavity, making it difficult to prepare on account of the bleeding, apply a little trichloracetic acid, and proceed without further trouble.—*Dental Brief.*

A SPLINT FOR RETAINING LOOSE TEETH IN PYORRHEA.—Dr. Fish fits a soft piece of platinum to the palatal or lingual surfaces, strengthens same, and then fits little pieces of gold to the interdental spaces, fastening the two together with screws and nuts.—*Cosmos.*

REMOVING EXCESS VARNISH FROM CAVITIES.—*The Australian Journal of Dentistry* says: "After varnishing a cavity, and before introducing the filling, remove excess of varnish by using small pieces of rubber dam. It takes up the varnish and leaves no lint behind."

HOW TO REMOVE BLOOD FROM THE HANDS.—When you have blood on your hands, first wash them in pure water. Using soap at first is a mistake, as soapy water does not dissolve blood rapidly. Clear water and a nail brush should come first, soap next. —*Medical Summary.*

BRYONIA FOR NERVOUS EXCITATION.—In small, frequently repeated doses, bryonia relieves nervous excitation, lessens the tension of the arterioles, diminishes the frequency of the pulse, gives freedom to the circulation, reduces temperature and promotes waste and excretions.—*Medical Summary.*

IMPORTANCE OF CORRECT OCCLUSION.—A gold cap crown can possess no more stability than that which is afforded it by the tooth to which it is attached, and is firm only to the extent that it distributes the force of mastication uniformly throughout its attachment. In like manner large gold restorations are strong or frail in proportion as they, too, serve in opposing the entire remaining strength of the tooth to the forces of occlusion.—*E. J. Hart, in Review.*

TRICHLORACETIC ACID FOR FISTULA FROM ALVEOLAR ABSCESS. —With cotton carefully placed around a Donaldson broach, saturated with the acid, you can reach the bottom, and in most cases the fistula disappears after two applications. In all the above cases I use the pure acid, in small quantities. In forty-eight hours all trace of its action has gone, except the good results; the mucous membrane peeling off, as it were, and a new layer formed. —*J. S. Ashbrook, in Dental Brief.*

TO PREVENT VULCANITE FROM STICKING TO EXPOSED SURFACES OF ALUMINUM PLATES.—For the benefit of those readers who make upper dentures on an aluminum base with vulcanite attachments I would suggest that, in order to prevent the rubber that flows over the lingual surface of the plate in closing the flask from adhering to the aluminum and being difficult to remove, they cover the surface of the metal with a piece of extra tough tin foil No. 4, before cosing the flask, being careful not to allow it to extend beyond the limit of the exposed area of the plate. Every one who has done this kind of work knows how closely a thin layer of rubber adheres to the aluminum and how difficult it is to remove. The use of the tin foil, as suggested, removes the difficulty entirely.—*A. N. Dick, in Pacific Dental Gazette.*

REPLACING BICUSPID AND MOLAR FACINGS IN THICK BRIDGE. For replacing bicuspid and molar facings, where the bridge is too thick for the length of pins to reach through for the heading, the plan may be nearer original, as I worked it out myself, although others may be doing the same thing. A horizontal slot is drilled in the bridge a little longer than sufficient to allow the pins of tooth to slip in, and depth about one-half the length of pin. With a wheel bur extend the length of the slot at the bottom so as to form an undercut for the bent ends of the pins to catch in. Then bend the tooth-pins at a short right angle, one each way, toward the sides of tooth, to catch in the undercut portion of the slot, one pin entering the slot first, so that when in place each pin slightly catches and cannot come out. After it is well fitted set in cement, and it will be as solid as if soldered.—*H. W. Northrop, in Cosmos.*

TUBE CROWN.—The object of this clinic is to illustrate the making of a porcelain crown. After the root has been thoroughly treated and made ready for filling, the end of it is prepared the same as for a standard crown. A pin of iridio-platinum wire, screw cut, is then firmly anchored in the canal with cement and amalgam. A platinum tube and flange is then carefully fitted over the pin and end of the root; care should be taken to have the flange dressed to the exact contour of the root, to avoid as far as possible any overhanging edges. The platinum flange may be nicely tapped into place by the use of plugger points and a mallet. A porcelain facing the proper size, shade and shape (preferably a plate tooth) is selected and fastened in position by bending the pins around the tube. These may be soldered to the tube with pure gold. Close's body (fused in the Custer electric furnace) is used to build up the rest of the crown to proper contour. Generally two bakings are sufficient. The crown is then set in place with cement.—*Dr. H. D. Noble, in Pacific Dental Gazette.*

TWENTY-FIVE PER CENT PLATINUM SOLDER.—After my experience with pure gold as a solder, and using great care that there was absolute contact of the joints to be soldered, this experience extending over a considerable space of time, my advice to "those who have no facilities for fusing platinum solders" is, either possess yourself of those facilities, which all may do, or else do not attempt porcelain crown and bridge work at all, for if you do "you will be sorry." Pure gold melts at a temperature much below that required to fuse true porcelain, and if a solder which requires a greater heat to fuse it than is necessary for the porcelain is *better* than pure gold, which it is, what excuse is there for using pure gold? I go on the theory that the best is none too good. Since I began the use of a twenty-five per cent platinum solder, confined myself to the employment of a high-fusing porcelain (Close's), and have used nothing but base plate gutta-percha for anchoring these crowns and bridges, my previous troubles, which come often to annoy and worry me, have all dissolved into thin air, I have taken a new lease of life, and my patients "bless and curse not."—*A. W. McCandless, in Review.*

EDITOR'S NOTES.

UNJUST CRITICISM.

There crops out frequently, in our dental society meetings, a spirit of criticism that seems unjust and uncalled for. Just criticism is always admissible and productive of good, but unjust criticism is out of harmony with the true spirit and purport of our professional gatherings. This spirit of criticism is too common. Simply because one man's method may differ from yours, is not alone cause for criticism and condemnation, for it may bring the same results and be as much easier for him as your method is for you.

We are inclined to believe that much of this criticism comes from immature thought, but often some petty jealousy, or dislike, seems to give rise to it.

Recently in a dental meeting one member said: "Dentists are the greatest braggarts on earth, etc." He means you, all of you. Is not this a strong statement? It is true that we have some who are given to boasting, but these men soon find their level. Where we have one of this kind we have hundreds who tower above self-praise; men whose qualifications and attainments stamp them as superior without telling the world of their ability. That man is looked upon as mediocre who is continually telling of his great accomplishments. Why, then, should this remark be thrust at the whole profession? Is it just?

During the past year or so many mouth preparations have had to take their share of criticism and condemnation, worthy and unworthy alike. In some instances through personal spite, in other instances only on general principles, or likes and dislikes.

We don't care what preparation it is, so long as its contents or composition is known, no one has a right to condemn it until he has proof of its inferiority. Antiseptic washes and dentifrices have multiplied until there are scarcely names enough to go around, and which are reliable and which unreliable? The profession wants to know the truth. Why can we not have an unbiased comparative test that we may know which to adopt and which to condemn? If an article is unworthy our recommendation and use, we want to know it. We want to eliminate the worthless and keep the good, but until we have the proofs we should refrain from criticising and condemning.

The carefully wrought experiments of Prof. Black were severely criticised, and in many instances his results condemned by men who had made no attempt to corroborate them through experiments and tssts.

So we might cite other cases, but there are enough for the purpose of calling your attention to this prevailing habit of criticism.

The day is passing when man can set theory or opinions up against the results of actual research. If you want to criticise others' work, do similar work yourself to have truth on which to base your assertions, for it is possible for man to guess and guess and never strike the truth.

THE OHIO STATE BOARD OF DENTAL EXAMINERS.

Perhaps the members of the profession in Ohio and in other states may be interested in the work of the Ohio board. At its last meeting, May 29-31, 1900, practical work was inaugurated to better test the capabilities of the applicant. This removes one of the heretofore weak features of the Ohio board and accomplishes what the members of the present board have been working for since their appointment by the Governor. It also raises the standard of the examination so that it is now equal to that of any other state. The greatest obstacle to dental legislation in Ohio is its poor dental law. Had the new law been enacted, instead of defeated, it would have raised the requirements, and licenses issued by the board could then have been made interchangeable with

Pennsylvania, New York, New Jersey, and other eastern states. But now dentists desiring to practice in those states must take an examination.

During the past year there have been sixteen dentists arrested, convicted and fined for practicing dentistry illegally in Ohio, and from threatened arrest fully eighty more have ceased illegal practice altogether, or left the state.

During the year twenty-eight applicants have been examined, ten of whom were granted licenses to practice.

From May 29th, 1899, to May 29th, 1900, the board issued two hundred and sixty licenses, all, with one or two exceptions aside from those passing the examination, to college graduates.

The following questions were given at the last examination, May 29th, 1900:

ANATOMY, PHYSIOLOGY, HISTOLOGY.

EXAMINATION MAY 29-30-31, 1900.

(Answer 15 of these questions and no more; giving the number of the question answered.)

ANATOMY.

1. Describe the temporomaxillary articulation.
2. Mention the muscles attached to the superior maxillary bone.
3. What muscles are attached to the hyoid bone?
4. Describe the common carotid artery.
5. Mention in order the cranial nerves.
6. Describe the inferior maxillary division of the fifth nerve.
7. Mention and describe the salivary glands.

PHYSIOLOGY.

8. Give (*a*) the normal temperature, (*b*) the normal pulse, (*c*) normal respiration.
9. Of what does the circulatory apparatus consist?
10. By what processes is blood provided with new material and relieved of waste products? What is nutrition and repair?
11. Describe a nerve and give its function.
12. Mention three inorganic substances, and state where each is found in the body.
13. Describe the stomach and give its location and function.
14. State the physiologic action in the movement of a tooth to correct an irregularity.

HISTOLOGY.

15. Give the principal tissues in the animal body.
16. What is a cell?
17. Of what tissue is a tooth composed?
18. In what manner does dentin increase?
19. What are interglobular spaces?

20. Describe the peridental membrane. Does it differ from periosteum?

21. What is calcification and where does a tooth begin to calcify?

ORAL SURGERY AND PATHOLOGY.

Examination May 29-30-31, 1900.

(Answer any ten of these questions but no more.)

1. Describe ranula, give its etiology and treatment.

2. Give the etiology, diagnosis and treatment of trismus.

3. Give the varieties of abscess; differentiate an abscess and a cyst and give treatment.

4. What are dentigerous cysts? Describe progress of same, give contents and treatment.

5. Describe the necessary preparation of a patient for general anesthesia by ether or chloroform; state what remedies and instruments should be at hand; also describe Sylvester method of producing artificial respiration.

6. Describe fractures of jaws, how classified. Give diagnosis and treatment of same.

7. What are the possible complications of fractures of the lower jaw?

8. What is a Thrombus? What is an Embolus? What is an Infarct?

9. Differentiate surgical fever, septicemia and pyemia; give treatment of each.

10. Give the definition of the term wound, general classification and process of repair.

11. In what does the treatment of wounds consist?

12. Name the three sources of hemorrhage, how determined, and how arrested.

13. What is Haemophilia; give treatment.

14. Give the pathology and treatment of suppuration of the pulp.

15. Describe syphilitic ulceration of mouth, and give treatment.

MATERIA MEDICA AND THERAPEUTICS.

Examination May 29-30-31, 1900.

(Answer any ten of the questions on this paper but no more.)

1. Mention a remedy that antagonizes the constitutional action of aconite; a remedy that increases the constitutional action of aconite.

2. Mention the dose of (*a*) potassium bromide, (*b*) chloral, (*c*) acetanilid.

3. State the action of digitalis on (*a*) the heart, (*b*) the blood vessels, (*c*) the kidneys.

4. Mention two medicines that increase blood pressure.

5. State the local action of cocain on the blood vessels.

6. Which of the vital organs fails first in collapse, from (*a*) ether, (*b*) chloroform?

7. From what is oil of eucalyptus obtained? What is its use in dentitsry?

8. Define chemical antidote for a poison; physiological antidote for a poison. Give an example of each.

9. Mention the source of carbolic acid. State three properties of carbolic acid.

10. Mention a stimulant of the lymphatics.

11. State the dose of (*a*) morphin, (*b*) strychnin, (*c*) atropin.

12. Mention the following in order of efficiency as disinfectants: carbolic acid, bichlorid of mercury, oil of cloves.

13. What medicine produces emesis when administered hypodermically?

14. Define analgesic, rubefacient, tonic, stimulant.

15. State the difference between chemical incompatibility of drugs and physiological incompatibility. Give an example of each.

CHEMISTRY AND METALLURGY.

Examination May 29-30-31, 1900.

(Answer ten questions and no more.)

1. Distinguish between atom, element, compound, molecule and mixture. Give an example of each.

2. Give the formula and properties of each: hydrochloric acid, phophorus acid, and nitric acid. Give a use of each in dentistry.

3. Mention six metallic and six non-metallic elements. Give the symbol for each.

4. Define specific weight, atomic weight, and molecular weight.

5. Define acid, salt, alloy, base, valence.

6. Give the chemistry of some good bleaching process suitable for bleaching the teeth.

7. Give an exact method for producing a suitable solder for soldering 22k. gold plate.

8. Give a characteristic action on amalgam in dental alloys, of each, silver, tin, antimony, zinc, and copper.

9. Under what conditions do fillings produce harmful electric currents in the mouth?

10. Give the construction of any good chemical cell for producing an electric current.

11. Describe in detail a process for gold-plating a German silver regulating appliance.

12. Describe the action of $H_2 O_2$ when injected into an abscess, differentiating between its action upon pus and upon healthy tissue.

13. In treating a tooth with a fifty per cent (50%) solution of sulfuric acid, describe its action on each, enamel, dentin, gum-tissue, amalgam filling, gold filling, cement filling, and gutta-percha filling.

14. What is chemistry? Give a classification.

15. Give a solvent for gold and platinum, giving formula.

OPERATIVE AND PROSTHETIC DENTISTRY.

Examination May 29-30-31, 1900.

(Answer all of these questions.)

OPERATIVE DENTISTRY.

1. How should superficial dental caries be treated?

2. Give some of the best methods of treating hypersensitive dentin.

3. Give the best methods of filling small approximal cavities in bicuspids and molars.

4. Give the treatment for inflammation of the nerve after the tooth has been filled.

5. Give the treatment for putrescent pulps.

6. In what cases are plastic filling materials preferable to gold?

7. Mention the classes of cavities and teeth in which a combination of cohesive and non-cohesive gold should be used for filling materials.

8. What benefits result and what advantages are claimed from a combination of tin and gold as a filling material?

9. What is erosion? Where does it most usually occur?

10. In what classes of cases is immediate root filling advisable?

PROSTHETIC DENTISTRY.

1. What is prosthetic dentistry?

2. Describe the different steps in constructing a set of teeth in continuous gum and the materials used.

3. Give the method of making a Richmond crown; (*a*) a Mason crown; (*b*) fitting a Logan crown.

4. What causes inflammation of tissues under rubber plates? What is the remedy?

5. What is bridge work? Of what materials is it usually constructed? Why is silver not used in bridge work?

6. When would you use gold for backing in bridge work? When platinum?

7. What karat gold is most desirable for bridge work? Why?

8. What causes metal plate to warp in soldering? How prevented?

9. What are the causes of teeth checking in soldering in bridge work and metal plates?

10. Describe swaging by shot method.

CORRESPONDENCE.

A SUPPOSITITIOUS CASE.

Editor Ohio Dental Journal:

I note on page 222 in the May issue of your esteemed magazine an inquiry by S. L. McCurdy, M. D., with respect to the *justification* of a number of the regular dental profession giving testimony in a malpractice suit in behalf of a "rank advertiser," and I beg some of your valuable space to briefly comment on the answer submitted by Dr. Louis Jack.

When questions of "justification" of this sort asked in the abstract are answered with an "unequivocal No!" it argues either that Dr. Jack is capable of giving vent to "forceful exclamations" without first revolving the question before his mind's eye, or else Dr. Jack's views are more "restricted" than we have hitherto dared to charge against him.

In questions like the one before us, if a man weighs everything which may have a bearing upon the matter, it is not unlikely an "unequivocal No" prompted by a hyper-exquisite notion of the propriety of things would ofttimes be tempered more with "justice," and the mode of statement would be quite different.

Because a man is a "rank advertiser" could be no possible justification for *prosecution* at the hands of a member of the regular dental or medical professions, and if such a condition could prevail, why not defend him? Particularly if the malpractice suit involved a question which, were it decided against the "rank advertiser," might establish a precedent damaging to the "regular" dental profession. Courts have the foolish habit, don't you know, of drawing no distinction between the "regulars" and the "ranks."

Let us suppose a case: A person goes to the office of a "rank advertiser" to have a tooth extracted. Now—though few physicians know it—every dentist is aware that the extraction of teeth is *always* accompanied by more or less extensive *fracture* of the alveolar supports. Not infrequently these fractures result in inflammations of varying intensity, and, occasionally in aged or cachectic persons, results may follow as severe as *necrosis* and *exfoliation,* not being extensive enough to merit the name "sequestrum," of the fractured process.

These conditions, though bearing the suggestion of seriousness, are really so simple that a *dentist* would pick out the loose fragments with a dressing plier, and if he thought it necessary to relieve the patient's worries, he might suggest the use of "listerine or *something*" and dismiss the case without ado or charge.

A surgeon, on the other hand, one learned in orthopedics and skilled in "bone operations," might anaesthetize the patient and with the infinite patience and skill which come alone from long experience, make an "incision" in the gums—"swipe with a bistoury" is not the proper expression to use here—and with the proper bone forcep "deftly" remove the "sequestered" fragment, "curette" the parts, pack with "antiseptic gauze," renew the dressing with sufficient frequency to keep up the soreness and appearance of seriousness, and charge, say fifty dollars.

Patients, in these cases, are usually poverty stricken and cannot pay the surgeon's fee. The dentist may have a little money. So, in his infinite contempt for "rank advertisers," the learned surgeon is constrained to counsel a suit for malpractice, placing the damages at $5,000.

Such cases have happened. Would Dr. Louis Jack give an "unequivocal No" as his answer under these circumstances? Let us hear from Dr. Jack. In the meantime our disapprobation rests upon Dr. J. A. Libbey for nefariously standing up for truth and justice.

GRANT MITCHELL, D. D. S.

Pittsburg, Pa., June 6, 1900.

SOCIETY.

COMMENCEMENT.

The annual commencement exercises of the Western Reserve University, Cleveland, were held June 14th, 1900. Rev. Lyman Abbott, of New York, delivered the address to the graduates.

President Charles F. Thwing of the University conferred the dergee of Doctor of Dental Surgery upon thirty-two candidates for graduation.

NORTHERN OHIO DENTAL SOCIETY.

The forty-first annual meeting of this society was held in Cleveland, June 5, 6 and 7, 1900. The attendance was large and the papers and discussions of special interest. Fifteen new members were added, and, taken all together, the meeting was a most successful one. To add to the pleasure of those in attendance, the Cleveland City Dental Society gave a theater party Thursday afternoon, which was greatly appreciated and enjoyed by one and all.

The officers elected for the ensuing year are as follows:

President, F. W. Knowlton, Akron; Vice-President, J. F. Stephan, Cleveland; Corresponding Secretary, W. T. Jackman, Cleveland; Recording Secretary, W. A. Siddall, Cleveland; Treasurer, D. A. Allen, Toledo.

WEST VIRGINIA STATE BOARD OF DENTAL EXAMINERS.

A meeting of the West Virginia State Board of Dental Examiners will be held at Martinsburg, August 1, 2 and 3, 1900, for the examination of candidates.

The examination will be in writing, and will cover all branches taught in the representative schools, together with operations in the mouth.

Candidates are requested to bring instruments, rubber dam, and gold.

JAS. R. STATHERS, Secretary.

Sisterville, W. Va.

OUR AFTERMATH.

PERSONAL AND MISCELLANY.

A WORTHY APPOINTMENT.—Dr. F. W. Knowlton has been tendered the position of dental inspector of employees in the Diamond Match Company's works. He succeeds the late Dr. S. D. Stewart.

ARTIFICIAL CARIES.—I have just succeeded in producing artificial caries with a pure culture of the bacillus mesentericus vulgatis. The media was one per cent. glucose bouillon, and the time was nine months. There are many other forms, probably, that will do the same, and it will now be much easier to work them out. I believe this is the first *authentic* instance where decay has been produced by pure cultures of mouth bacteria, and I feel that it is an important step in advance. There is no secret about it. I should only be glad to find others working in the same line.—*S. A. Hopkins, in International.*

PARACELSUS'S CURE FOR TOOTHACHE.—The details of treatment which Paracelsus advocated are very curious. For the cure of toothache the patient is directed to take a splinter of blackthorn or willow, after removing a piece of bark from the tree, and with it to prick the gums until they bleed; then to replace the splinter in the tree and tie the cut up in the bark so that it will heal. The patient is thus cured and the willow, we suppose, gets toothache.—*British Journal.*

CHEMICAL COMPOSITION OF THE TUBERCLE BACILLUS.—Drs. de Schweinitz and Dorset find that cellulose in very minute amount is present in tubercle bacilli grown upon different culture media; it is probable, therefore, that cellulose is a normal constituent. The amount of fat in the bacillus is very large, being equal to about thirty-seven per cent. of the weight of the dried germs. The fat is principally a glyceride of palmitic acid. Other fats are present in small quantities. One of those, which is volatile, gives to tuberculous cultures their characteristic odor. The large percentage of fat in the tubercle bacillus suggested the use as a staining reagent of Sudan III., which is a useful stain for fats in histological and pathological work. The result was very satisfactory, and apparently this stain is more selective than carbol-fuchsine. Smegma bacilli, which stain readily with fuchsine, do not stain with Sudan III. The mineral constituents of the tubercle bacillus include sodium, potassium, calcium, and magnesium. The high percentage of phosphorus pentoxide and the absence of other acid radicals were noticeable. Phosphates and cod-liver oil are two materials frequently recommended in tuberculosis. As the terms of the disease seem to demand a large quantity of food containing phosphorus and also rich in fat, it is said to be a fair supposition that in giving these drugs we are supplying to the animal body those constituents which are very important for its proper nourishment, the supply of which is constantly being drawn upon by the bacilli.—*British Medical Journal.*

ANNOUNCEMENT.—Mr. W. B. Saunders wishes to announce the final accomplishment of a step that he has long had in mind. Feeling that the growth of the business to its present large proportions has been due, not alone to his own exertions, but quite as much to the efficient co-operation of a number of his employees, he has decided to give recognition to such service by associating with himself in business, under the firm name of W. B. Saunders & Company, Mr. F. L. Hopkins, Manager of the Subscription Department, and Mr. T. F. Dagney, Manager of the Publication Department. These gentlemen have been connected with the establishment almost from its inception, and to their capable management of their respective departments Mr. Saunders attributes much of the success that has attended his efforts. Mr. Saunders believes that this action will strengthen the position of the house in the eyes of the medical profession, as it will secure a permanence of organization that will secure the perpetuation of the business. Besides this, it will obviate the disadvantages incident to a large business that rests entirely upon the shoulders of one person, by permanently attaching to the house those whose ability and experience have contributed in bringing the business to its present state of prosperity. The Subscription and Publication Departments will be conducted as heretofore. The Trade Book Department will be under the management of Mr. W. D. Watson, whose connection with the house has extended over the past eight years, and who has demonstrated his ability to manage that department with efficiency and success.

MARRIED.—Dr. J. Ward House, of Grand Rapids, Mich., was married June 6th to Miss Helen Louise Shepard. Congratulations.

APPOINTMENT.—Dr. H. Prinz, St. Louis, has been appointed Professor of Dental Medicine and Metallurgy in the Dental Department, Washington University, St. Louis.

UNIFORM STANDARD OF DENTAL FEES.—Dr. H. L. Wheeler would solve the problem by making a charge, at least a minimum charge, for time required, whether it be for examination, advice, treatment, operating, or mechanical work, of any kind. He thinks a charge for time would be more equitable than a charge based on the operation alone.

THE FRAUDULENT COLLEGES.—Illinois has long possessed a vicious law under which it was possible for irresponsible men to obtain charters for colleges authorized to confer degrees. This has made Chicago the headquarters for all the degree-selling fraudulent colleges of the country. The matter was first publicly ventilated in the report of the Committee on Foreign Relations of the National Association of Dental Faculties, at the annual meeting held two years ago in Omaha. This report was a scathing denunciation of the law, which it pronounced a disgrace to the state. The Committee was continued by the National Association and they were authorized to expend such sums of money as were necessary in the further prosecution of the investigation. The report aroused a great deal of feeling among the educators of the state and a meeting of representatives of the various degree-granting literary institutions was called and a committee was appointed, consisting of Presidents Harper, of Chicago University; Rogers, of Northwestern, and McClure, of Lake Forest, to memorialize the Legislature and to endeavor to place the educational affairs of Illinois on a better basis. The report of the Foreign Relations Committee was widely circulated. It was presented before the Legislature and extracts from it were printed in circulars and in the newspapers. The efforts of the Committee failed, but the counsel of the Foreign Relations Committee introduced another bill, authorizing the annulling of the charters of any colleges which granted degrees improperly. The Illinois State Board of Health was already at work toward the same end and the Foreign Relations Commitee joined forces with that body. The consequence has been that the conductors of the "Independent Medical College of Chicago," which has advertised openly in the newspapers that it would furnish diplomas for a consideration, have at last been caught and brought to book. It was found when they were arrested that they were in possession of *twenty-four* different charters, so that when one was annulled they could immediately operate under another. These men are now in jail, and it is hoped that the worst of the fraudulent colleges is broken up and that its fate will deter others. It is believed that this fraudulent institution has sold in this country and in Europe more than a thousand fraudulent diplomas. In recognition of the important services of the Chairman of the Foreign Relations Committee of the National Association of Dental Colleges, Lake Forest University at its commencement conferred upon Dr. W. C. Barrett, of Buffalo, the honorary degree of Doctor of Laws (LL. D.).

THE

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CONTRIBUTIONS.

NEW METHOD OF SHAPING PLATES TO DIES BY MEANS OF RUBBER.*

BY DR. E. L. PATCHIN, CLEVELAND, OHIO.

When you have an upper plate to shape or swedge, and you have obtained the right kind of metal for the die, and have traced out the rugae, and scraped here and there, having provided for your turned-up posterior edge, and your die is obtained, you will be ready to do the shaping. When you have obtained at the rubber store two pieces of rubber known as the car-spring variety No. 1, 3¼ inches square, No. 2, 2½ inches square, each one inch thick, you will need a medium-sized crutch tip, filled about half full with a piece of tough rubber. Also get a strip of all-rubber packing half an inch square by 15 or 18 inches long. This is the piece which forms the rim and is used last. You are now ready to shape No. 1 rubber to the die, making it the shape of a counter die except that it should lap over about half an inch all around, and be about half an inch thick at the crown of the gums. You can easily shape this in two minutes with your knife. You will shape No. 2 as a lingual holder so it will be only large enough to cover the lingual surface. This should be somewhat the shape of the other. These pieces, Nos. 1 and 2, can be used many times with only slight changes. You are now ready to anneal your metal plate and place it upon the die. Place this in your flask press, place No. 1 upon it and bring it down quickly and firmly. You will find that the metal is spread out under your rubber and conforms to the die. Now take your machinist's hammer and pound down the exposed rubber not too hard this time. Push down the plate which is to form the rim and mark it. Then release it and cut size of plate, being careful not to bend it much. Put your tip cushion upon the small end of the hammer and steady your plate upon the die; strike hard blows upon the plate and you will see it settle into place very readily. Place No. 2 upon the plate, apply the pressure, and take your horn mallet and drive your rim into place, being careful not to lap it. Now release it and put No. 1 on, and turn and pound down tight; then take your packing rubber and shape like a loop, pass it around the metal plate and up next to lap of No. 1 rubber, through the uprights of the press, gather the ends with the left hand, tip die back onto solid surface and pound down hard. Your plate is now down upon the die, or if you think not anneal. Put it into the Parker swedge-block and pack small bits of rubber about as small as B. B. shot upon it, same as shot in that method. The rubber should be quite firm. I prefer the very hard plumbers' balls or rubber corks. The hardest place to bring it down is at the rim of the plate, especially if there is an undercut the horn mallet will help you out. This method is especially valuable with aluminum. If you are careful it need not take but a few minutes to finish the metal, as the finish is as good as when you bought it. Buy the 22 gauge. In using the rubber and Parker method I come down very hard, so hard that I imagine that the John Chinaman from China below lookey upie and say, Melicaman muche shootie big gunnie.

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*Demonstrated before the Northern Ohio Dental Society, June 7, 1900.

DISEASES OF THE PERI-DENTAL MEMBRANES.*

BY FLORENCE M. TAYLOR, D. D. S., CLEVELAND, OHIO.

The peri-dental membrane is a layer of fibrous connective tissue, surrounding the teeth, and corresponding to the peri-osteum in other parts of the body. It is intimately connected to the roots of the teeth and the alveoli. An attempt has been made by some to divide it into two layers, one connected with the root, the other with the alveolus. From, or through this, the tooth receives its nourishment. It not only nourishes the tooth, but acts as a buffer or cushion during mastication, or in the event of any unusual blow upon the tooth.

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*Read before the Northern Ohio Dental Society, June, 1900.

From its very location, this membrane is especially liable to injury and inflammation. While disease may originate in the tooth socket itself, or externally, from inflammation of the gums, by far the greater number of diseases are caused by direct connection from the root canal.

Aveolar pyorrhea is one of the most difficult diseases to cure. Whatever the cause of the disease, when put pockets form around the root, it is hard to reach the seat of the trouble, but unless something is done to check the ravages of this disease, it is liable to destroy the peri-dental membrane, and eventually the tooth. Many dentists do not attempt to effect a cure in this aggravating trouble, and even say that it cannot be cured. I wish to state positively, that, taken early, this disease can be checked in most cases. A false membrane has been formed which is secreting the pus. The object to be kept in view is to destroy this false membrane.

I follow Dr. Younger's treatment, with which you are doubtless all familiar. After thoroughly scraping out the pocket, and removing any calculi, I inject, with a hypodermic syrnige, a saturated solution of lactic acid, using care not to allow any to escape into the mouth. With eucain as an anesthetic, there is very little pain from the operation.

The first case that fell into my hands had been treated by several dentists in the city. The tooth was very loose, and the patient was in fear of losing it. At first I tried several things, without permanent relief, until I used Dr. Younger's treatment. Two treatments, after this, cured the pyorrhea, and in three years there has been no return.

Another patient came several hundred miles to place herself under my care. She had been consulting dentists for two years, and had been told that she could not be cured. I gave her two treatments and then allowed her to go home. There was a slight return of the trouble, and three months later she came back to the city. I gave her one more treatment, and there has been no return of the trouble, after nearly three years. These were both chronic cases but two treatments in one case, and three in the other, effected a permanent cure. There may be certain cases due to constitutional troubles, that will not yield to local treatment, but such cases I have not seen.

You have all noticed how a change in the weather increases patronage. People often come with a history of getting their feet wet. There is something about catching cold that predisposes to, or causes, a pericementitis. A tooth that the patient knows needs filling is neglected because it does not cause any inconvenient, until he or she is caught out in astorm, or is exposed to a draught, and then there is trouble. It may be nothing more than a congestion, that counter-irritation or blood-letting will relieve. But the usual history of the mild attacks is that they return, unless the tooth receives proper attention, and sooner or later an abscess is formed. All degrees of peridental inflammation exist, from a simple congestion to an abscess, causing local, or constitutional symptoms.

Any disease of the pulp is liable to be communicated to the pericementum, with the death of the pulp and the presence of the bacteria of putrefaction, there is thickening of the pericementum. The tooth becomes loose and tender on percussion, but even after the thickening of the membrane, and loosening of the tooth, the products of inflammation may be aborted, and the pericemental disturbance subside. But, unless the pulp cavity is disinfected, septic pericementitis nearly always results later, with abscess formation.

When pus forms the symptoms vary largely, according to the difficulty of evacuation. In an acute abscess, when the pulp cavity is not open, drilling into this will often relieve the trouble and the swelling and soreness subsides in a few days, so that the tooth can be filled. When the peridental membrane has become thickened, loosening the tooth from its socket, the patient objects to having the tooth touched. Holding the tooth firmly between the fingers, or making moderate traction with a ligature, relieves the pain in opening the tooth. We do not always give nature a fair chance; she will often cure a pericementitis, even after abscess formation; with very little help. Thoroughly disinfecting the roots is the first step, and in my own experience, the lance comes next. I do not believe in enlarging the opening at the apex of the root.

Foreign substances, as a piece of toothpick, or tartar, may set up an acute inflammation of the tooth membrane. In one case, in setting a bridge, a piece of cement was pushed up beyond the gum line, and escaped my notice. The tooth became so sore that the patient could not use the bridge in mastication. After removing this piece of cement the inflammation subsided. A filling extending beyond the tooth margin may set up a pericementitis. Any inflammation of the gums may extend to the peridental membrane, and the tooth become so sore that the patient thinks there is an abscess. Orthdontia may cause pericementitis, if the teeth are moved too fast. Carelessness in opening root canals may set up an inflammation around the root. Not long ago I found a bur broken off in a root canal, which I had considerable difficulty in removing. The tooth had been filled three years before but finally caused so much trouble that I had to remove the filling.

In another case, an operator had drilled through the bifurcation of a molar. The tooth was completely filled with a tumor, which I cut out; then bridged over the opening between the roots with chloro-percha, and filled the tooth with cement; after waiting six months to see if this would cause any trouble, I put on a crown. What is your prognosis?

I have reported these cases with the hope that they will call out other interesting cases in the general discussion.

ANAESTHETICS IN DENTISTRY.*

BY DR. A. E. MANN, FINDLAY, OHIO.

Realizing that my subject was a broad one, my first thoughts were the words of Ben King, the Michigan poet. "Say when and say it or else don't you talk to me," so I shall try to be as brief as possible.

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*Read before the Northern Ohio Dental Society, June, 1900.

There is nothing perhaps so much sought after by our profession as "painless methods," nor is there anything so much appreciated by our patients as our efforts to alleviate the pain during our operations. To be known as a "painless dentist" is to have a good practice, so it behooves us to know all we can about painless methods. Many appliances and methods have been brought forth to this end. Some have come to stay; others have been discarded.

Anaesthetics are divided into "General and Local." Under "General Anaesthetics" we have chloroform, ether and nitrous oxide gas, which are in daily use by dentists. The profound narcosis of chloroform and ether is seldom called into use except for surgical cases of no more import than the extraction of a tooth. However, if a patient applies to have many teeth out and prefers to be unconscious during the operation, either chloroform or ether may be given, provided his physician will be present and administer the anaesthetic.

As it is not the purport of this paper to discuss the use of these (agents) outside of the field of the ordinary practitioner, I will have nothing further to say of either chloroform or ether.

For the busy dentist nitrous oxide gas is the *sine quo non* as a general anaesthetic because of the simplicity with which it can be administered, the rapidity with which patients recover from the effects, and the almost entire absence of unpleasant after effects. Since the advent of local anaesthetics some fifteen years ago, gas has fallen into disuse by many operators. I think this is to be deplored, for there has been a hundred fold more ill effects from their use than from gas. Probably the main reason for this is that many operators never have given it enough attention to become skilled in its use, or perhaps never had the proper equipment for its administration. Personally, I had rather give gas to the average patients coming to my office than any topical agent I have ever tried. I make my gas fresh daily and am assured of its purity. I much prefer fresh gas to cylinder gas because patients take it much easier, complain less of a sense of suffocation when first going asleep, and discolor very little if any. It does not take so much of the fresh gas to anaesthetize and the period of insensibility is a little longer. Gas will only remain fresh over water three days. One of the most important points in the use of any anaesthetic is to gain the confidence of your patient. Fear, of itself, will often cause an indisposition. We should try to assure our patients that what we are going to do will be painless, and not in the least unpleasant; by speaking to them in a "suggestive" way—i. e., as if we expected them to believe just what we are saying. You see I use the word "suggestive" in the sense of the hypnotist. Then, when using gas, we should observe the following rules:

First: Have everything out of the room to suggest the operation. I prefer my gasometer in another room with a pipe leading to the front of the chair. Always use a water gasometer and never use a rubber bag. The rubber bag will not feed gas to patient properly; the water gasometer, with the bell so buoyed by floats that it will go up or down with the respiration of a child, is the only kind that will feed gas to the patient just as he may breathe. (The Nevius Gasometer meets all the requirements.)

Second: Place patient in as near an upright position as possible; the object of this being to prevent the tongue from falling back into the throat, or the patient from swallowing a tooth that may slip from the grasp of the forcep.

Third: Have lady patients to loosen bindings both at throat and waist if very tight. However, use judgment here, as many ladies will be sensitive unless you have a lady assistant. (Unless bindings appear very tight I never mention subject.)

Fourth: Place napkin over the front of dress and select a suitable prop. Here is one place where many operators fail. Have all the different styles of props on the market and keep them scrupulously bright and clean. Study the case an instant and in time you need have little or no trouble with the prop. Always have two props tied together with a stout silk cord; in case the patient drops the prop in use, you have the other hanging outside of the mouth to grasp, thus preventing it from going down the throat. In cases where the patient drops the prop I have a mouth opener which I had made on the principle of a clamp forcep and with a ratchet arrangement to hold the jaws apart at any desired distance; the ends are covered with rubber to protect the teeth or gums and prevent slipping. I have this in my operating coat pocket.

Fifth: In selecting forceps use as few as possible for the case. Many forceps on the market are not practical for operating around the prop. I attribute much of my success in gas extracting to the shape of the handles of some of my forceps which I had had made to order. Have the forceps, hand cuspidor and wet sponge on bracket table.

Sixth: Use only the flexible Hood inhaler and operate standing in front of, and to the side of patient. This is a little hard to do at first, as most men stand to the back of the chair. This keeps the patient sitting upright and prevents the blood running down the throat.

Seventh: Give gas without any admixture of either chloroform or atmospheric air. However, if patient begins to discolor much before the anaesthetic state is reached, a few breaths of air will be beneficial. The breathing should be carefully watched; at first it will be irregular owing somewhat to nervousness from breathing through the inhaler. Then comes what I term the "suffocating period." Here speak in a suggestive way to the patients, assuring them that there is nothing to fear and to breathe deep and regular. The breathing now will be full and regular, followed soon by short and quick breathing together with a twitching of the muscles of the neck. The eyes may roll up and become glassy; this twitching together with a touch of the eye for reflexes will indicate the state of narcosis in most cases. Sometimes stertorous breathing will indicate it. Others again will appear almost as if wide awake, and in several cases I have had patients apparently watching the entire operation when completely narcotized. We must judge in such cases by the amount of gas given. One rule observe: Give plenty of gas and don't be afraid of it, using judgment of course.

In operating take out as many teeth as possible with each forcep before changing. Grasp each tooth securely and don't go faster than your skill will admit. Any number from one to fifteen may be extracted during the period of insensibility which will last from twenty to forty-five seconds. When through operating lean patients forward and instruct them to spit in cuspidor under the chin. Mop forehead with wet sponge. If any nausea follows give a tablet or two containing

Cocain Hydrochlorate	1-12 gr.
Bismuth Sub. Nitrate	2 gr.
Oxalate of Cerium	2 gr.

as this will relieve the nausea. Any headache that follows can often be corrected by a tablet containing 5 grains of antikamnia or a teaspoonful of hydrobromate of caffein in a half glass of water, to be taken during effervescence. As this pain, if present, is probably due to oxygen starvation, fresh air is the best cure. I very seldom notice these effects. Very aged or feeble patients and those suffering from asthma, quinsy or goitre and not good subjects for this or any anaesthetic. However, patients afflicted with asthma or quinsy may take gas if not wheezing at the time. As to heart trouble, I have given gas many times to known cases of organic lesions of this organ with no ill effects whatever. Operators who make gas a specialty claim the same.

Under local anaesthetics we have cocain, eucain, nirvanin, orthoform, ethyl chloride, etc.

In the use of topical agents hypodermically great care and judgment are required of the operator. The field of local anaesthesia has been fertile in disappointments both to operator and patient. Although grave symptoms will sometimes follow even their most careful use, they have become a necessary adjunct to every dentist. Much of the ill effects follows their careless and indiscriminate use.

The vaso-constrictive power of cocain, together with the fear of the operation on the part of the patient, will often cause a cerebral anemia, which is the cause of the slight or grave symptoms that sometimes follow its use. Weak or very nervous patients especially require care, and if it is very warm or very cold weather, I prefer to have my patient in as near a horizontal position as possible during, and for a few minutes after each operation. Personally, I never inject more than one tooth at a time, and in this manner I feel my patient, so to speak. After extracting this one I wait from ten to fifteen minutes, and then if no toxic symptoms arise, I inject three to five more, and wait again if more teeth are to be extracted.

The strength and freshness of cocain solutions are of the greatest importance. As cocain is not very diffusible, a weaker solution will allow of a wider spread anaesthetized field than a stronger solution.

To have uniform success one must not only have a proper strength solution but must know how to use it under the various circumstances, and in all pathological conditions of the gums. A one per cent solution is the proper strength for healthy gums. For soft or spongy gums a five per cent solution should be used. Make one deep injection on each side of tooth of about two minims each and extract almost immediately so as to get the parts to bleeding. By keeping quarter grain tablets on hand the operator can make his solutions fresh for each case. Experience has proven that the addition of other drugs to the solution only tend to act as irritants and cause sloughing.

If the operation is of any magnitude it is well to have it follow a light but refreshing meal of which coffee is a part, and no dentist should administer this or any anaesthetic without that which will antidote its toxic effects always on hand.

Of the syringe I wish only to speak of the needle. It should be neither too coarse or too fine; No. 23 Standard wire gauge is proper. It should be so ground that the planed surface at the end is about one-sixteenth of an inch long and round at extreme end instead of a fine attenuated point. This is important as the fine point is apt to separate the tissues instead of cutting them and thus hindering the absorption of the drug. The needle can in 95 per cent of the cases be inserted painlessly in the following manner:

First assure patient that it will be painless, then place the planed surface on gums flat and press on the piston until you see some of the solution oozing around the needle; wait an instant, and then gradually work under the mucous membrane, all the time forcing the solution ahead of the needle; continue in this manner until the needle is in as far as you wish, which should be nearly opposite the end of the root and as near the edge of alveolus as possible. Buccaly or labialy the deep injection should carry enough of the solution to form a sack about the size of a split pea; the other should be near the gingival margin and at right angles to the root. This and the lingual or palatial injection should carry enough to whiten the tissues. The one per cent solution will require from four to five minutes to anaesthetize the parts.

While cocain is a dangerous drug, its intelligent use is a great boon to both operator and patient, as many people dislike the idea of being unconscious as under a general anaesthetic.

Of more recent discovery we have the synthetical products, eucain and nirvanin. It is claimed for them that they are about five times less toxic than cocain and give an analgesia of longer duration. Also that their solutions can be boiled and are permanent, having a moderate anti-bacterial action.

Both of these agents are rapidly coming to the front. This is due principally to the fact of their being less toxic than cocain. However, they are not entirely free from danger and the same care should be observed in their use as with cocain. A five per cent solution has been found to give the best results with either. Eucain "B" is the salt recommended by the expert chemists, Messrs. Schering and Glatz.

A harmless and painless edema will sometimes follow their use, but it will seldom last more than one day. I have found nirvanin to be even safer than eucain "B," and where I do not wish to use cocain I prefer this.

Orthoform as an anaesthetic is very valuable for pain after extracting, by dusting the powder into the sockets; for buccal ulcers, burns or other sores about the mouth it is very beneficial in relieving the pain, as its anaesthetic effect is of several hours duration. Severe toothache, when due to an exposed pulp, I have found to be very quickly relieved by it. Used in pyorrhea pockets it enables the operator to scale the roots painlessly. Orthoform is also antiseptic and styptic.

Anaesthetics have recently come into use very extensively in pulp removal, the method being as follows:

Take a very small piece of punk and saturate with a solution containing one part of formalin and four parts of alcohol; now place this on some powdered cocain crystals and place in the cavity and cover with unvulcanized rubber; then gently press on the rubber with a ball burnisher and in a few minutes you will have the pulp anaesthetized. If pulp was not actually exposed you may have to make another application after removing the softened dentin. I have had almost uniform success with this method. Anaesthetics are now also used extensively to obtund sensitive dentin.

The method of "Pressure Anaesthesia," as suggested by Dr. W. J. Morton, is a great stride in this direction. Pottassocain and vapocain, etherial solutions of cocain, when given sufficient time to act and properly covered in the cavity with beeswax, will in many cases almost entirely relieve the pain of drilling, and in most cases will lessen the pain somewhat.

It is a well-known fact that even a slight acidity of cocain solutions partially inhibits its anaesthetic effect and that a slight alkalinity enhances it. For this reason pottassocain which is slightly alkaline, owing to the potassium contained, gives better results than vapocain. This has been my experience at least.

Whoever devises a method of forcing cocain into the dentinal tubuli that will work uniformly and not devitalize the pulp, will have accomplished this much desired end.

Of ethyl chloride I will only say a word. With the other methods of producing analgesia, I see no use for its painful freezing spray, except possibly where you wish to remove a live pulp from a sound tooth or lance an abscess. I have removed the pulp of a sound tooth successfully, however, by injecting the one per cent solution of cocain into the gums as near the apex of root as possible. In removing a live pulp from a sound tooth, or in lancing a painful abscess, the administration of the gas will often be very much appreciated by our patients.

Much more might be written upon the subject of anaesthetics in dentistry, but I have endeavored to cover the ground in a general way, being as brief as possible, hoping to elicit a liberal discussion that would bring out many points not covered by this paper.

I realize that my subject is one upon which dentists differ, and while I do not claim to be an authority, I will say that I find the methods and agents described above to be successful in my own practice.

To the discovery of anaesthetics, dentistry as a profession and science owes much of its present high state of development.

The sun in the day of *painless dentistry* is now past the horizon and is fast approaching the meridian. When the mid-day of its accomplishment is here, then with our improved appliances for operating, and our successful anaesthetics, our patients can come to us knowing that their work will be performed with the utmost skill and with practically no pain whatever.

SOME THOUGHTS ON PRACTICAL DENTISTRY.*

BY DR. T. S. SEELEY, NORWALK, OHIO.

It is a pleasure to be present at this Association and to greet you as brothers in this noble profession. Dr. Crouse says the successful dentist is considerable of a man; while others may bluff their way through, the dentist meets conditions and not theory. That is what we should have in our associations—well-tried experience reduced to facts.

A practical thought is that each dentist within reach should consider it his duty to attend the associations. Who is it that thinks he should charge less for his services than his neighbor? Not I. Then, sir, it is your duty to avail yourself of every opportunity to do as well as he. Close attention to what is said and done at the associations, with a thorough perusal of our good dental journals, with plenty of recreation, well covered with a desire that each operation is equal to what you would want in your own mouth, would make you "considerable of a man."

That causes me to say it is the dentist's business duty to do his best work every time.

I desire to say a few words about amalgam. Two out of three cavities, probably more, are filled with plastic material of which amalgam is the larger part. At present I think amalgam fills two cavities as often as gold fills one. Therefore its importance. How shall we get the benefit of its good qualities without the bad?

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*Read before the Northern Ohio Dental Association, June, 1900.

You all have your theory and some actual experience of the good and bad qualities of amalgam. What is the result of mixing amalgam with good cement as regards strengthening frail walls or building up frail roots to secure gold crowns? Also if well packed it arrests decay better than amalgam.

The objection to amalgam and cement is that it discolors the tooth nearly as bad as amalgam. It will not wear; even the zinc wearing out first leaves the spiculas of amalgam too prominent and rough and is but little better close to the pulp than amalgam. Amalgam and cement mixed together should always be covered with amalgam. The best use I can make of amalgam is to prepare the cavity, protect it from moisture, place some oxyphosphate of zinc in the cavity, then a small piece of amalgam to spread the cement well over the inner portion, then with another small piece press the cement firmly against the wall of the cavity and clear the edges so the cement can be all covered. The result is a tooth with the walls well supported, no discoloration, and as near no decay as with any filling used.

Should there be too near exposure of the pulp it should be covered with a flake of Hill's Stopping, after disinfecting, and when you ask about the cement close in contact with the pulp, will say it will not cause half the trouble that all cement will, and in many shallow, buccal cavities you can get the best of results with but little attention to retaining points.

REFLEX LESIONS OF THE ORAL CAVITY ASSOCIATED WITH PREGNANCY.*

BY F. A. M'AULEY, D. D. S., CLEVELAND, OHIO.

In selecting this subject it is not my object to cover the field or to tell the number of lesions which are caused through the reflexes during utero-gestation, but to trace as far as possible the sympathetic relation and certain disorders of the teeth, depending upon functional disturbance or structural lesions located in some remote part of the general organism, promising that a better understanding of the laws of reflex action and a more familiar acquaintance with nerve function and a clearer insight into the reciprocal or mutual relation, existing between widely separated regions, would lead to a more trustworthy view of the causes of sympathetic disorders of the oral cavity, the origin and nature of which we, as professional men, know very little about.

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The thought which occurs to the profession, both dental and medical, is that as utero-gestation is an undisputable physiological act it would not give rise to such irritation as would produce sympathetic affections of the teeth, and this would undoubtedly be true if the utero functions were normally performed, but as the reproductive act is a usually conscious one, leads one to the conclusion of functional derangement, for the senses are oblivious to the normal processes of organic life. Therefore, no person in perfect health is supposed to have, through the medium of common sensation or mental perception, any knowledge of a brain, heart, lungs or uterus. The frequency of oral disorders, associated with pregnancy, is in itself a presumptive evidence of a general disturbed uterine function more or less severe in character. Let us examine into the general accepted theory of certain pathological states of mouth during gestation. The universal view, I believe, is that there is more decay of the teeth during this period, which is due to the increased consumption of lime-salts incidental to vital growth and development, and this superadded draft upon the calcific elements of the material circulation, by divesting the lime-salts from the teeth, impairs the integrity of the latter, producing a nutritive lesion characerized by diminished ossific deposits, and a corresponding domination of animal constituents, thereby producing a softening condition rightly supposed to favor decay. This theory would seem that the assumption of the bone-producing elements supplied by the ingesta are in the unimpregnated state largely, if not wholly, appropriated by the tissues into which they enter as a component, that there is not ordinarily any adequate provision for the excessive demands of a process of a Divine ordination, and when the exigency occurs it becomes a simple question of divide between the mother and fetus.

H. J. WEISKE.—THE SUBSTITUTION OF STRONTIUM FOR LIME IN THE ANIMAL ORGANISM.

Haselhoff theorizes that J. Koeing's researches prove that lime can be substituted in the animal organism. H. J. Weiske, on the contrary, notes that while strontium passes into the organs—flesh, bones, etc.,—a physical organic replacement cannot be supposed. The administration of strontium is therefore physically unimportant. Does the continuous administration of acid mineral salts have an influence on the composition of bone? The author has previously shown that by continuous administration of dilute sulphuric acid to a food composed of hay and cereal, not alone the bones of the sheep suffer a noticeable diminution of mineral ingredients, but also the lime in the flesh of such an animal is influenced. According to Hintzman, as well as Hofmeister and Seidamgrotzky, lactic acid acts likewise. Weiske has also found that the administration of acid mineral salts, such as monosodium phosphate, acts likewise. Only on teeth a noticeable difference could not be determined.

THE RESEARCHES ON THE INFLUENCE WHICH THE ADDITION OF DIFFERENT SALTS TO FOOD HAVE ON THE BODY WEIGHT AND THE COMPOSITION OF THE BONES AND TEETH.

The action of $CaCo^3+NaPo^4—Ca^3 (PO^4) 2+Na$ citrate acid were steadier as compared with monosodium phosphate. The important result of this extensive and tedious research was that oats alone as food, with the addition of $CaCo^3$, favorably influenced the development and composition of the rabbits' bones. The other salts conduct themselves indifferently or injuriously. The teeth here were less influenced than the bones, and, of the bones, the flat and the spongy the more.

G. KOBLER.—ON OSTEOMALACIA.

Examination of the ash of the blood from cadaver of a case of osteomalacia.

	Osteomalacia.	Normal
$P_2 O_5$	7.25	8.49
SO_3	16.04	6.85
Cl	19.925	29.59
$K_2 O$	34.16	25.565
$Na_2 O$	9.35	23.169
Ca O	0.35	0.872
Mg O		0.512
$Fe_2 O_2$	12.85	7.86

Strontium cannot physiologically replace calcium in bone composition. This was held by Koeing and others. According to J. Riidel, on the absorption and excretion of lime salts in rachitic children, says, as a criterion for the absorption, the lime excretion through the urine was taken for twenty-four hours, according to Newbower, with ammonium oxalate and acetic acid and the oxalate weighed as sulphate. The research, conducted mostly on children, in the case of calcium oxide the lime in the urine increases from eighty to one hundred and twenty-six per cent, therefore almost double of the amount administered only one and three eight-hundredths per cent passed into the urine. Sodium phosphate diminishes the normal lime excretion one-third or even one-half. On the contrary, the addition of HCl caused a slight increase in that excreted. Showing of intestinal peristalsis increases lime absorption. Injections of calcium acetate, rabbit or dog, twelve to thirty-four per cent appears in the urine again. Children were fed regularly with milk and bread and the calcium determined in the daily urine. In normal children variations occurred in the excretion within the limits of .002 to .005 CaO per kilogram. A milk with a specially high phosphoric acid cannot be obtained by the giving of calcium phosphate with the food. In the case of a milch cow a slight increase in phosphates in milk is only attained after three or four weeks of continuous administration of phosphate feeding.

Voit says calcium increases with increased administration, it however represents but one to six per cent of that administered. While this might account for the increased sensitiveness of tooth bone due to mechanical or chemical stimuli, where decay exists it is hardly competent to explain the severe and distressing pain in teeth with unbroken structures, which is clearly distinguished from hypersensitiveness nor does it in any manner explain the various neuralgic affections coincident with impregnation. We will have to look farther for some rational solution of the causation as it relates to the oral phenomena with the reproductive processes. I believe a more plausible and defensible theory is due to the reflex lesions, structural or functional. In support of this theory I shall first ascertain if the organs of the mouth constitute an area correlated to the uterus through a medium of a sympathetic system of nerves.

The cerebro-spinal nerves are sent out from their centres in divisions or companies of seven and each company acts together and serves a common definite physiological purpose. These divisions are:

	Strands of cerebro-spinal nerves.	Distribution.	Associated ganglia of sympathetic.	Main distribution.
Area 1,	Trigeminus, facial, etc.	Face and its orifices, anterior scalp.	4th cerebral.	Head.
Area 2,	Upper 4 cervical.	Occipital region, neck.	1st cervical.	Head, slightly to heart.
Area 3,	Lower 4 cervical and 1st dorsal.	Upper extremities.	2d and 3d cervical and 1st dorsal.	Heart.
Area 4,	Upper 6 dorsal.	Thoracic wall.	1st to 6th dorsal	Lungs.
Area 5,	Lower 6 dorsal except last.	Abdominal wall upper lumbar, upper lateral thigh and surface.	5th to 12th dorsal.	Abdominal viscera, testes, ovaries, fundus uteri and renal plexus.
Area 6,	12th dorsal and 4th lumbar.	Lumbar region upper gleuteal anterior and interior thigh and knee.	1st to 4th lumbar.	Pelvic organs.
Area 7,	5th lumbar and 5th sacral.	Lower gleuteal posterior thigh and leg.	1st to 5th sacral.	To pelvic organs and sympathetic supply being small.

With this division of the seven cerebro-spinal strands of nerves it is very easy to understand the causes of neuralgic pains associated with gestation. Consequently, if the disturbance in the pelvic region were such as to produce a slight irritation, the reflex lesion of the pulp would manifest itself as a so-called sympathetic neuralgia caused by a pressure of the nerve fibres by an engorgement and distention of the blood-vessels. Sympathetic neuralgia of the sound or unsound teeth, which is very commonly associated with pregnancy, cannot rationally be accounted for except in the manner here indicated.

In conclusion of this paper let us apply facts in explanation of the phenomena of softening and more rapid decay of the teeth during gestation. The lesion is purely a reflex one. Anything like habitual hyperemia of the vessels of the pulp must, by altering or diminishing the blood supply, more or less interfere with the nutrition of the teeth, would be in the direction of degeneracy or retrograde metamorphosis of tooth structure. The defective assimilation of ossific matter for the purposes of repair, and certain diminished vital resistance to action of agents operative in producing solution of lime salts. These are frequent complications coincident with pregnancy and are always more or less distressing and harmful and often involve the loss of valuable organs. This subject is, therefore, one of great interest to us as oral specialists.

SOME REASONS WHY TEETH SHOULD NOT BE EXTRACTED IN YOUTH.*

BY G. B. WILLIAMSON, D. D. S., AKRON, OHIO.

It is not the purpose of this paper to startle its hearers with any new theories, but simply to refresh the memory on some things already known.

A careful study of the anatomy of the human jaw reveals the fact that this portion of the structure was not thrown together by the hit-and-miss plan, but was governed by geometrical and mechanical laws. These laws must be preserved in order to have a perfect articulating indenture.

The first reason we give why teeth should not be extracted in youth is because it is a violation of these laws of Nature, and every violated law has its penalty fixed. Man can only be at his best as he conforms with the natural and spiritual laws. They were made to govern and regulate his life. Nature, when left alone, is the best and surest guide to follow. She forms all the organs of the body even as the potter fashions his beautiful designs from the lump of clay.

All things start from a small beginning. So the dental organs start by small deposits of lime salt, particle by particle. Therefore the nearer to the beginning that deviation from the plan and purpose of an all-wise Creator is, greater will be the wrong at the end. The material want that called for the existence of the teeth calls for their preservation also, for Nature never supplies what is not wanted. The teeth, as well as all the bony structures of the body, are at the beginning soft and jelly-like in substance. Thus they have to go through a process of hardening before they meet the purposes for which they were intended. The harder the substance required to be the greater is the length of time required for its development. The teeth undergoing as they do a great amount of wear and exposure, must of necessity be very hard.

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They are the hardest substance of the body and it takes them a number of years to reach the required density that will enable them to last the allotted time of life. The reason that teeth do not last a life-time is because of the violation of natural laws. The architect, having a pre-existing knowledge of the slow development of the teeth, provided for a temporary or deciduous set of twenty teeth for the use of mastification while the permanent teeth were undergoing this process of calcification and development. The uses of the temporary teeth are the same as those that follow, and the careful preservation of these temporary teeth is of vital importance to the health and growth of the child. The loss of these teeth impairs mastification, which condition, if continued for any length of time, produces indigestion, malnutrition and intestinal trouble. Whatever trouble affects the nutrition of a child no only injures its physical growth but impairs the structure of the permanent teeth. When there is no interference with nature, she has very wisely arranged for the shedding of the deciduous teeth at different periods of the child's life. So it is never without sufficient teeth to properly masticate its food. It is the duty of the dentist to advise and instruct parents as to the value of the deciduous teeth and the necessity of presrving them until nature is ready to dispose of them. Too often the patient advises the dentist what he should do instead of seeking advice from the dentist. There are times when a reputable dentist will popsitively refuse to comply with the requests of the patient.

The public in general is very ignorant of the care of the teeth, especially the temporary ones. It is often said, "What is the use of bothering with them? They will all come out anyhow."

If man cannot have perfect denture as long as Nature's laws are not obeyed, and there is no other way to bring about obedience except through the proper instructions of the dentist, is it not time that the profession was *fully aroused to its great responsibility*.

The dentist should fill the mind of the patient as to the value and care of the teeth as well as fill the teeth. It is often expressed by the dentist that there is no use wasting time, they will not heed our instructions. Let use remember that constant pounding at the bulwark of ignorance and indifference will sooner or later break down the most obstinate wall. Parents should be instructed as to the prophylactic care of the children's teeth as well as to the proper use of the brush. The mode of living fills a very important place in the development and preservation of the teeth. The children of the nineteenth century, generally speaking, are indulged in sweet-cakes and candies until they have no relish for wholesome diet which will nourish and give strength and health to bones and teeth. There is also great harm done to children by the premature extraction of temporary teeth, especially the molars. I had a patient brought to my office a few months ago who showed some of the disastrous results that may develop from the premature extraction of the temporary molars.

Master C——, a boy eight years of age, had been relieved of his temporary molars two years previous. The force of mastication had moved his first permanent molar inward and forward until there is not room for the second biscupid to erupt within the arch, and there is still greater trouble to follow when the cuspids erupt. Another serious result may occur from premature loss of the deciduous teeth. The permanent teeth not having an obstruction in the way, may erupt before they are properly calcified, hence the weak walls are soon crumbled down by the ravages of decay.

The fourth reason why the deciduous teeth should not be removed until Nature is ready to supply their substitutes is because it prevents a perfect development of the jaws. The jaws develop posterially as the growth of the permanent molars require room. The premature extraction of the deciduous molars before their substitutes are ready to fill the vacancy permits the first permanent molar to be forced forward, as has already been mentioned, giving room for the second molar to erupt without requiring so much posterior development of the jaw, thus producing a shortening of the jaw. This shortening or contracted condition of the jaw may be handed down to posterity and the outcome is very bad forms of irregularity.

In connection with reasons why temporary teeth should not be prematurely extracted, will also be given reasons why the permanent teeth should not be removed in youth. One reason is that nature has so arranged the teeth in normal jaws that the articulating surfaces of the teeth sustain to each other certain mechanical relations which are essential for perfect mastication. The removal of the teeth destroys this relation, thus impairing the facility for mastication, at a time when it is most needed for the proper development of a perfect body.

A careful observation reveals the fact that the true maxilla are reinforced by an alveoar process as the teeth develop to strengthen them. This process absorbs when the teeth are removed. The roots of the teeth pass through this process and into the maxilla nearly one half of their length. The extraction of a tooth leaves a lesion in the alveoar process as well as the body of the jaw.

Owing to the extent of bone involved in the extraction of the first molar the jaw bone becomes weakened and the muscular pressure from the anterior portion of the jaw produces a backward and upward movement to the superior jaw and a backward and downward movement to the inferior jaw. There is also a falling in of the teeth caused by the pressure upon their buccal surfaces. These results are more noticeable when the extracting is prior to the fifteenth year, and after the second molars are erupted. This retrogade movement of the anterior teeth is not the only harm that may arise from the early extracting of the first molars. The second molars, not having a support to hold them in place, are tipped forward by the force of mastication until they become practically useless.

I will conclude with this aphorism, that the old plan of nature is the best safeguard to follow whenever possible.

ADVANTAGES IN THE USE OF CRYSTAL MAT GOLD.*

BY N. H. BISHOP, D. D. S., ANDOVER, OHIO.

In connection with the use of crystal gold I have always borne in mind the observations of Prof. S. H. Guilford, as to its value as a filling material.

They were: That the first preparations of it for this purpose promised to be a valuable discovery. Owing to the ease with which it could be manipulated, adapted to the walls of a cavity, etc., and that the finished fillings presented a very gratifying appearance. It was thought at the time that something akin to perfection had been found in it as a gold filling.

But a short time of trial proved disappointing, and fillings which went away with smooth and polished surfaces came back looking as though they had had the small-pox.

I do not remember that other objections were urged to its use other than that it was more difficult to secure a dense hard filling, and that the edges and surfaces were inclined to crumble.

The preparations now in use are probably much improved, as well as the manner of manipulation. My experience has only covered a period of two years, and is mostly based upon use of Solila gold No. 2, manufactured by E. de Trey & Sons, of Philadelphia.

Notwithstanding the assertions made by the makers of this and other forms of crystal gold, the very nature of it might cause one to lose confidence in its ability to retain a good surface. However, the fault may lie greatly in the operator, in not thoroughly condensing each piece until the bright color of the gold is brought out, giving particular attention to the edges. My best results have been obtained by pressing each piece carefully to place with a rounded pointed finely serrated hand-plugger, as large as can be conveniently used in the cavity, finishing the condensing with a smaller point not necessarily rounded.

The ball-points are less apt to cut the gold, and when used with a rolling motion have a tendency to press it latterally against the walls and edges of enamel without as much danger of fracture to the latter. If condensed thoroughly with a small point, and when the filling nears completion, very satisfactory results may thus be obtained, which promise to be lasting.

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In extensive contour work I would not consider its use necessarily indicated, but it will be found a great convenience in starting such fillings, when they may be finished with a good cohesive foil, which will be less expensive and give stronger and better results.

What I am led to believe are advantages in the use of crystal mat gold, are as follows:

Facility with which it can be used in connection with a lining material.

Facility of use in connection with matrices.

Obviates the necessity of deep retaining points and grooves.

Facilitates placing a cap or intermediate.

Can be quite thoroughly condensed by hand pressure.

Facility with which it can be used from lingual surfaces of incisors, and other cavities hard of access.

An even surface is more easily kept than with foil.

May be built onto old gold fillings.

Less trying to the eyes on account of color.

Saves time in use without dam.

Soldering assembled parts of crowns and bridges.

And cohesive quality.

The ease with which it can be used in connection with a lining of zinc phosphate or zinc chloride, may be considered one of the most important. In this manner all the advantages of a lining material may be combined with a beautiful and permanent piece of work.

I have obtained what I believe to be excellent results from the following: Thoroughly prepare the cavity, being reasonably sure it will retain an ordinary gold filling, or as you would for amalgam, but with smooth and beveled margins. If sensitive portions of dentine are exposed, use any good intermediate varnish. Anneal your crystal gold according to directions.

Make a mixture of a medium slow-setting zinc phosphate, which can be rolled and kneaded between the thumb and finger. Take of it a quantity sufficient to cover the bottom and such walls of the cavity as it is necessary to strengthen or protect.

Press to place with a ball burnisher, being careful not to use an excess of cement or allow it to come clear to the margins.

Take of your crystal gold a piece large enough to cover bottom and sides of cavity, press it carefully to place and follow it up with another, which should be condensed more thoroughly, using round-pointed pluggers. By this time the cement will have commenced to harden and small points may be used to make a closer union between the gold and cement and to more surely condense the gold. The cavity may be nearly filled or well started in this manner, and finished with any kind of gold in which the operator has most confidence.

Thus, a lining may be used to strengthen an incisive edge or corner when a little in doubt as to whether it should be left or not. Again, it makes a happy combination in the teeth of young people whose teeth are not hard enough to warrant an all metal filling, and where cement alone would prove unsightly and fail to keep the proper separation.

It does away with all trouble in starting a filling and saves pain in the preparation of many cavities, which are items of no small importance.

The advantage of its use in connection with a matrix, is on account of the facility with which it can be forced into small crevices and acute angles.

Prof. Guilford used to state that it was impossible to thoroughly fill and force gold into an acute angle, but with this preparation it seems practically possible.

In placing a cap or intermediate, the first piece used should cover material, bottom and sides of cavity, and be pressed down gently. The next piece may be better condensed, and so on. It is more easily handled to avoid pressure where it is not desired.

It being readily condensed by hand pressure makes the operation much more agreeable to the patient than would the use of any kind of hammering device yet invented, at the same time reducing the danger of fracturing enamel margins.

Its principal advantage in working from the lingual surface of superior incisors and other places where much of the work has to be done from reflection in the mirror, is the readiness with which a filling may be started, and the tendency of the pieces to stay where they are put, doing away with the trouble which some of us may have experienced in the falling, rolling and tipping of foil golds. Thus more operations can be conducted from the lingual surface, many times saving good tooth structure, unsightly display of gold and some separating.

The uniform surface is probably accounted for by use of round-pointed pluggers and the rolling motion which should be given them, thereby spreading the gold like a paste.

In repairing old gold fillings, it is a great convenience, as it may be made to cohere to the old gold; and may be successfully used in repairs at cervical margins in small places where foil gold could not be started as readily.

It saves time in use without dam, in cases where the cavity can be kept perfectly dry without it, owing to the ease with which the first pieces are kept in position and its ready combination with a lining. It sometimes occurs that labial cavities situated at the cervical margins of superior cuspids and incisors and impinging on the gum, may be disposed of in this manner, thereby saving considerable pain in the application of the dam. Such a procedure should not be attempted unless the cavity can be kept perfectly dry.

Another use, is to aid in soldering the assembled parts of a bridge by filling inter-spaces between backings and crowns, etc., with it. The solder may be flowed across wherever desired. It will stay better where it is placed than other forms of gold, and solder will flow over it very readily. The remarkable cohesive qualities of this gold render it a great convenience, as it may readily be combined with tin or other forms of gold.

It is not intended to convey the idea that De Trey's is the only make of crystal gold which may be used as stated, as there are doubtless other makes equally good.

And again, I do not wish to be understood that crystal gold is to be used any and everywhere, but if handled intelligently, and not misused, it will be found a great convenience and help.

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

PAINLESS EXTRACTING WITH CHLORETONE.*

BY H. A. FOSTER, D. D. S., OMAHA, NEBRASKA.

I have had an experience in painless extraction which may be of interest to other dental operators, and which I therefore submit for perusal and consideration.

I was called upon in February last by a man who requested me to extract eighteen teeth for him. I asked Dr. R. M. Stone, who has frequently employed the Schleich method for me, if he would give the man the injections of the Schleich Solution. A single glance seemed to satisfy Dr. Stone that it would not be advisable to do so, since the patient was somewhat cyanotic—his nails and lips being blue.

We thereupon proposed to use chloretone, which had been brought to our notice a few days before, and highly recommended as an efficient local anaesthetic. I injected a few drops of a saturated solution of chloretone around the roots of the teeth designated, eighteen in all, and proceeded to extract them.

The patient sat quietly in the chair during the entire time, opening his mouth to receive the forceps, as requested, and said, after all the teeth were out, that he had suffered no pain worthy of mention during the whole procedure.

On a subsequent occasion, only a few days ago, I removed twelve teeth in the same manner without a murmur of dissent or evidence of pain on the part of my patient. I am delighted with the action of chloretone, and I shall use it in all future extracting.

CHRISTIAN SCIENCE—ITS DEMONSTRATIONS IN DENTISTRY.

BY MARGARET M. ELLISON, WINNIPEG, MAN.

I had some teeth filled, one nerve extracted, and two teeth drawn without a touch of pain. The dentist prophesied a great deal of pain in extracting the nerve, but I knew God's law was more powerful than any law of dentistry, and I felt no pain at all, although he probed several times before getting the nerve.

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*From article in Dominion Dental Journal.

I have been many times with patients to the dentist, and with two exceptions, the patient has felt no painful sensation whatever. The first case I had was a woman whose teeth were so hard to draw the dentist said he could not get them out. She came for treatment, and then went again. He managed to draw them, but they came very hard. He asked her how she managed to stand it. She told him, much to his surprise, that it was painless, and explained the kind of treatment she had had.

Another, a girl, wanted all her remaining upper teeth out. They were principally roots, as the teeth had broken off. There were eleven in all. They came without pain, although part of them had to be dug out.

A young lady came to me last summer. She wanted four teeth out and new ones in at once, as she did not want to have to stay at home, and as the teeth were front teeth, she did not want to be seen so disfigured. We went to the dentist by appointment; I arrived first. He was not busy at the time and came into the waiting room and asked me if I were the Christian Scientist who was going to treat Miss ——. I said I was, and upon some questions being asked and answered, he said that he would do as nearly as we wanted him to as he could, but that he did not believe that both bleeding and swelling could be stopped so that she could have her teeth immediately. However, the young lady came and the four teeth were taken out without pain and the bleeding stopped at once. The dentist took an impression with very warm wax, also without pain, the gums did not swell, and the next morning she had her teeth and was wearing them without any inconvenience whatever.

I have had many more demonstrations along the same line, equally good. I want to relate an experience given in one of our Wednesday evening meetings.

A young man whose only teacher has been our text-book, Science and Health, said when he first came into Christian Science he had a great deal of trouble with aching teeth, but that he treated them and they ceased paining him. After a while he found that the cavities were filled up with new bone, and he has never had any trouble with them since. His faith in the Truth is "as a little child."

I have had many demonstrations of the power of Truth, as revealed in Christian Science, as able to destroy all our erring beliefs, be they of pleasure or pain, and I am deeply grateful to Mrs. Eddy for revealing to us the way to the divine heights of Love and Life.—*Christian Science Sentinel.*

METHOD OF WIRING FRAGMENTS TO SPLINT.*

BY F. T. VAN WOERT, BROOKLYN, N. Y.

In the case where the fragment of bone is gone, you must remember that suture holes were placed well back into the fragments of the inferior maxilla, and that after the splint was placed in position it was considerable of a task to get the wires there. My method of doing that is, I think, worth a few seconds' consideration. I use No. 23 silver wire, and as leaders I use copper wire, which is wound on a little spool. I pass through the suture in the maxilla as many strands as I want of silver wire, adding two or three extra strands, so in case of a break I will still have enough. After the leaders have been put through the suture and the hole drilled into the splint, the whole thing is placed into the splint, leaving the strands sticking out of the splint on one side and the suture on the other. The wire is then twisted to one of those strands and pulled through. Now we have it through once. If we cut that off and string those strands through again until we have four or five, as the case may be, we would weaken all of them, from the fact that when you take it up you make a weak joint of every one of those wires; so I continue the course of one wire until I have four or five strands in continuous rotation around the fragments, making only one twist of that wire and retaining the strength of all by that method, and I have yet to see a wire break when put through sutures in that way. The copper wire is very flexible, and when wound into a bunch in that way is very easy to introduce. There is one thing absolutely necessary, and that is a proper pair of forceps for grasping and catching these wires at the time you need them. Any of the forceps can be used, of course, but a curved pair is much better, and you can reach through the opening in the splint. Maybe it will get around one of the leaders; with these forceps you can get hold of it and start it through again. Sometimes it is necessary to do that three or four times.

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*Extract from article in Items.

THE USE OF PYROZONE AS A COAGULANT.*

BY H. J. KAUFFER, NEW YORK.

I first used pyrozone twenty-five per cent. to allay hemorrhage caused by the extraction of an upper second molar. The patient was sent to me last July by a physician in my neighborhood. She told me the hemorrhage had been very constant from the time of the extraction, early in the afternoon, until I saw her at 8:30 that evening, when it was bleeding most profusely. I syringed the cavity with a solution of alum, and, after packing it with styptic cotton, I applied a wax compress and bandaged the head to keep the plug well in place; bleeding by this time had somewhat abated, but the much desired hemostasia had by no means been accomplished, and in fifteen minutes the hemorrhage had become quite vigorous again. I continued the syringing with alum, but finding that the bleeding was increasing, I decided to remove the compress with the intention of applying the actual cautery. My patient by this time had become very weak and nervous from the loss of blood, and absolutely refused to allow me to use the iron. Fearing a general collapse, I did not insist.

Feeling that pyrozone, owing to its abundance of oxygen in an unstable form, would best answer my purpose, I removed the styptic cotton plug and thoroughly cleansed the cavity by syringing it with lukewarm water (cold water should always be avoided in these cases); then I applied a piece of cotton saturated with a twenty-five per cent. solution of pyrozone, and the result was most gratifying. The rapid oxidation of the blood and surrounding tissue immediately formed the long-looked-for clot, and all further hemorrhage was checked. I packed the cavity left by the extracted tooth with cotton moistened with the pyrozone, twenty-five percent. solution, and again applied the wax compress. I then syringed the mouth with a diluted three per cent. solution of pyrozone to remove the debris caused by oxidation of the blood and tissue. After a careful bandaging of the jaw, so that it held the wax firmly in place, I allowed my patient to recline for half an hour, when, having no further hemorrhage, she was removed to her home. The bandage was removed two days later, and she had no further trouble.

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*From Dental Cosmos.

I had not a favorable opportunity of using pyrozone as a coagulant until last week. I have, however, used it on many occasions to prevent hemorrhage during minor operations, for which it is extremely efficient; leaving the tissue clear and clean for further work, and acting at the same time as an effective germicide. The next case of severe hemorrhage after extraction of teeth was in the person of a young miss of fifteen. She had a lower first molar extracted on December 29. After a severe hemorrhage, she tells me a thick clot formed in the cavity left by the extracted tooth, and, except slight pain, she had no trouble with it until the morning of January 4, when, about 1 a. m., a secondary hemorrhage occurred. The family physician was summoned; he made use of various styptics and coagulants, but, obtaining no permanent clot, I was called in about noon. I found my patient extremely depressed, her nerves were in a state of high tension, and she was also somewhat weakened from the loss of blood. In this case, as before, I applied the styptic cotton and the wax compress, not wishing to take any chances with a new treatment. The hemorrhage, after some moments, was apparently checked, and I returned to my office. I was again sent for at five o'clock, the hemorrhage having by this time renewed its former vigor. I then removed the compress, and, after cleaning the cavity, used the pyrozone as heretofore described, with the same satisfactory results. There has not been (up to the time of my writing, January 15) the slightest trace of bleeding from the cavity, which is quite exceptional in such cases. The alveolar process had been sacrificed to a most unnecessary degree, and the surrounding tissue horribly lacerated; in fact, to such an extent had the alveolar process been removed and crumbled that the teeth on either side were quite loose. Fearing that after removing the wax compress, on January 6, mastication might cause the reoccurrence of a hemorrhage, I affixed a gold compress, which was very readily made by fitting a piece of half-round clasp wire to each of the adjoining teeth, and placing between them a flat piece of gold covering the entire cavity. To the under side of this was soldered a loop, extending well down into the cavity which the extracted tooth had left. Around this loop was wrapped cotton moistened with a diluted three per cent. solution of pyrozone. Any other germicide or antiseptic treatment desired may be used. When this is put in place a most effective compression is accomplished without the otherwise necessity of bandaging the head.

REPLANTATION OF THE NATURAL TEETH.*

BY F. J. MURLLESS, WINDSOR LOCKS, CONN.

In extracting the tooth great care should be observed to avoid accident of any sort either by checking the enamel or injuring the root or alveolus. It is self-evident that failure to extract a larger or smaller portion of the root will contraindicate replacement of the tooth, and that injury to the gum margin will be marked by a point at which the gum will contract and exposure of cementum follow.

Immediately after the tooth has been extracted and placed in bichlorid solution the alveolus should receive careful examination with the probe that the slightest disorganization or roughening of bone tissue may be discovered and measures taken for removal of the affected portion. This can be accomplished with an engine bur or a scraper, the shape of which will be determined by the case in hand. At the earliest possible moment the alveolus must be packed with a wicking saturated with a not too thick solution of aristol and chloroform. The selection of this particular combination has been made because fibers of cotton seem less likely to become detached and remain behind to serve as an irritant after the withdrawal of the wicking.

*Abstract from Dental Digest.

If the time occupied with the examination of the alveolus and necessary curetting has been at all long, attention must be given before introduction of the wicking to the removal of coagula from the walls of the socket and securing as nearly as possible freedom from blood. The wicking should be packed tightly against the walls, great care being taken to avoid giving pain through pressure. The hemorrhage will be comparatively slight if this has been done with sufficient care, and further coagulation will take place in the wicking, so that when it is removed later on there will be nothing left behind. This is desirable because the replanted tooth will occupy the same space as before and the tiniest particle of coagulated blood present will be forced against the tissues and greatly increase the pain associated with the replantation.

To secure necessary dryness for the work upon the tooth, and at the same time maintain an aseptic condition (which seems unavoidably associated with moisture), is somewhat difficult. A napkin moistened with bichlorid affords a most insecure grip upon the tooth for so long a time as is required for pulp-cavity work and the placing of necessary gold fillings, and the constant slipping of the napkin upon the pericementum can but injure it. I feel that a strenuous effort at disinfection of the hands by way of preparation, and afterward keeping the fingers and tooth slightly moistened with the antiseptic, is rational and practical.

Preparation for the work upon the external and pulp cavities should be thoroughly made before taking the tooth in hand. The operations of filling pulp cavity and making necessary gold fillings in the tooth crown may be performed according to the accepted methods of the operator, except that in the pulp-cavity one of the cements is preferable, because when hardened it will allow the immediate contact of the gold in filling without yielding.

It is my practice to shorten the root apically. The degree to which this is done is determined somewhat by the length and form of the root, my idea being to cut behind diseased pericementum, to remove deformities, to save pain for the patient by leaving a slight space in the socket for the blood which will unavoidably drive ahead of the root when replaced, and also to give a place for the gold filling with which I always finish the apical end of the pulp cavity filling, preferring gold at this point because it is non-absorbent and unabsorbable. I cover the cut end of root to edge of pericementum with the filling, finishing with the burnisher, and in the same manner close with gold any perforation of the cementum which may have been made in the effort to cleanse the pulp cavity or prepare it for the reception of a crown-pin.

In the case of a root to which a crown is to be attached an injury to the cementum may be closed without obstructing the space necessary for the reception of the pin, by beveling the margin of the orifice so that the edge tapers both inwardly and outwardly, and then supporting a matrix from within the pulp cavity by use of an orange-wood wedge shaped for the occasion, and arching the space with gold. I have had such a root in place and carrying a crown and in healthy condition for the past six years.

Before replanting the tooth, approximal cavities disclosed in adjoining teeth by the extraction may be most conveniently filled.

When all is ready, and the tooth after having been handled has been placed in the bichlorid bath for a few minutes, the tooth should be taken in the fingers, the root form particularly noted and the exact movement of turn and thrust with which it will be returned to its socket decided upon. Having placed the tooth in the most convenient position to be seized without the slightest delay, the wicking should be quickly but gently removed from the alveolus and the tooth carried to place instantly, that there shall not be the slightest accumulation of blood in the alveolus. Thus a great deal of needless pain will be avoided and the replantation quite possibly prove painless.

The replanted tooth may be sustained by the splint of gold or gutta-percha previously prepared; or a ligature properly interlaced between the teeth of the region and supported by supplementary stays of silk thread passing over occlusal surfaces may be all that is necessary; or the approximal cavities being available, continuous fillings of gutta-percha may be made reaching from one to the other, and prove most satisfactory.

All soreness of the part will pass away in a day or two, during which time the patient should be provided with proper antiseptic mouthwash, more especially to correct throughout the mouth the results of imperfect mastication. The case should be seen daily, so that ligatures may be kept intact and the part irrigated with an antiseptic solution. It is most unlikely that any occasion for the slightest further attention will arise, but if an inflammatory condition should present the tooth may be removed and examination of both tooth and socket made for the point of inflammation. Irrigation of the socket with a warm sterilizing solution will furnish necessary correction and the tooth may be returned to place. In ten or fifteen days the tooth will have assumed a normal condition which will justify its utilization if desired to carry a plate clasp or serve as a bridge pier. After repeated examination of such cases, running through a considerable period, I am unable to discover them to be in anything but the most satisfactory condition.

AN IMPROVED BING CROWN—A NEW CROWN EXPEDIENT.*

BY L. L. DUNBAR, D. D. S., SAN FRANCISCO.

The introduction of the thin Carborundum disk suggests an improvement in the Bing crown that makes it a really valuable addition to our crown methods. As will be remembered the device of Dr. Bing was a single porcelain crown with lateral pins to engage with cavities in adjoining teeth, these to be filled with one of the cement filling materials or something more durable. In the employment of the latter for permanent fixation the operation has always been formidable, and the range of tooth selection being limited to only a few stock forms.

In the new form of crown here suggested, any tooth of suitable face and morsal surface can be used, and with a minimum of labor on the part of the operator and inconvenience to the patient a really artistic result can be had. As in the case of the Bing crown this method is better adapted to the replacement of lost single bicuspids, or molars, but in its application an ingenious operator may extend its field of usefulness.

The models herewith presented show its application in the case of a missing left lower second bicuspid. The first step in the

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*From Pacific Dental Gazette.

operation is the slotting of the adjoining teeth, which is done in one operation with a three-quarter inch thin carborundum disk. As both teeth are operated upon at the same time, the alignment is perfectly true. Now take a piece of copper plate twenty-six or twenty-eight gauge, cut in exact reproduction of a segment of the disk, set it in the prepared slots and take an impression in modeling compound, secure an occlusion, and the preliminary operation is over. When the model is made the copper segment will appear as in the mouth; it is only necessary then to copy the copper strip by scribing its shape on a strip of iridium platinum and substitute that in the model for the copper. Select a tooth of suitable shape and color, grinding away the pins and fitting it over the platinum strip, securing such occlusion as is required. This often necessitates cutting a slot in the platinum strip, which suggests fitting the tooth over the copper strip first so that the platinum strip can be altered in accordance with such change.

A small plate of platinum is then fitted to the gum for a base upon which to form the neck of the tooth. This is attached to the strip by a post of platinum, the whole being soldered with pure gold. This skeleton is then returned to the model, and the tooth ground in place and fixed with wax cement. Then remove and invest in equal parts of plaster and silex, first covering the outer face and morsal surface of the porcelain with shellac varnish. Dry out investment, and pack with Close's continuous gum body around the pin and over the platinum base, and bake in the Custer electric furnace. After this has cooled, removed from investment, and disk the surface of the tooth with emery paper disks to remove the etched surface. Try on model. Then complete the contour by the addition of more porcelain body and bake again. If the application of the body is carefully made two bakings will suffice. The entire manipulation in the laboratory is so simple that it is easily accomplished by an assistant after one or two trials. The tooth being finished, as shown in the sample herewith, it is ready for the mouth. In order to accomplish its proper insertion apply the dam, dry out the slots, and flow with copal-ether varnish or cavitine. Evaporate with warm air, then flow in Harvard cement and set tooth in place. The upper surface of the strip may be so shaped as to be about a line below the enamel surface, and the extremities secured with a gold filling placed in the fissures and covering the length of exposed strip. This involves no tedious operation, and the result far surpasses any single crown expedient now in use. It is certainly less disfiguring than the open band or gold crown method, and presents less danger to the teeth of attachment. This process has thus far only been used for bicuspids and molars, although it has greater possibilities. No danger of pulp exposure is to be apprehended, as an examination of the slot will disclose, and the smaller area of tooth tissue involved lessens the danger of subsequent interference by decay.

Impingement on the gum tissue is impossible, and the contour can be such as will enable the patient to clear out the interproximal spaces perfectly. The device is submitted on its merits, and will, I trust, prove as valuable in other hands as it has in mine. Accompanying this is a model with slots, etc., prepared for the finished tooth, also the copper try-strip and the iridium-platinum strip cut down for the better restoration of the morsal surface. These are interchangeable with the finished tooth on the model, also model of a finished case in the mouth, being left upper second bicuspid. These will show all the essential details, so that any one familiar with porcelain work may comprehend.

SUGGESTIONS ON PORCELAIN.*

BY DR. A. C. BREWER, BALTIMORE, MD.

In the few words I have to say I will deal separately with the practical points of the work, describing each step; while a great deal I will say may be a repetition of what has been written, I hope you will be able to glean a few points from my experience.

In the approximal cavities of the front teeth never attempt any operation without a large separation, with the exception of such cases where the labial or palatal wall is gone to the depth of the bottom of the cavity. In such cases very little separation is needed. In compound cavities of bicuspids and molars, about the same separation is needed as for large gold fillings. In the preparation of simple approximal cavities of the anterior teeth there is little to suggest, with the exception that all cavities should be slightly flaring from the bottom to the orifice of the cavity, avoiding all undercuts. In contours of the front teeth all edges should be at right angles, with the exception of the thick part of the tooth near the gum, where it should be flaring from the bottom of the cavity to the palatal and labial surfaces, gradually sloping off to a right angle about a line from the cervical edge. This is done to avoid any thin right-angle edges at the cervical margin. In the preparation of contour cavities of the front teeth, the cavities should be at right angles from the bottom of the cavity to the orifice, where it again turns to a right angle. Cavities formed in this way will retain fillings without undercut or without grooves in the porcelain, but of course it is best and more practical to take all precautions.

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*From article in Cosmos.

In compound cavities of bicuspids and molars, free access should be made from the occluding surface. Any deep undercuts that, if supported by cement, would be strong enough to withstand mastication should be filled with cement or Hill's temporary stopping before the matrix is made.

In polishing the edges some use fine stones; others use diamond points. I have tried them all. The best, in my experience, is a round, smooth burnisher made soft by heating, rotated by a high speed in the engine, kept wet with the pumice, and for right-angle surfaces the thin perfection cloth cuttlefish disk made by The S. S. White Dental Mfg. Co.

MAKING A MATRIX.—In simple cavities use a piece of gold just a little larger than is necessary to make the matrix. In contours of the front teeth and compound cavities of bicuspids and molars use a piece of gold large enough to make an impression of about two-thirds of the labial and palatal surfaces of the front teeth, and the same on the occluding surface of the compound cavities of molars and bicuspids, leaving it extend just slightly over the cervical margin and the margins looking to the cheek and tongue. For swaging, the pliers with pieces of spunk is the best, using first small pieces of spunk, so as not to crowd the gold against the margins, causing it to tear, but with an effort to swage the bottom first, being careful that none of the surplus gold is turned over the edge until the cavity is swaged.

After the cavity is filled with spunk, the spunk protruding out past the edges, the swaging is completed with a thin-ridged flat burnisher pressing on the spunk. In approximal cavities of the six anterior teeth, where the labial wall is intact and the palatal wall is gone, let the gold extend just a line past the labial or palatal edge, as the case may be; but do not turn the edges down, as leaving the edges stand out straight on one side will make it very much easier to remove the matrix without causing any distortion to the edges.

In a great many cases it is necessary, to better facilitate the removing of the matrix, by swaging the cavity and before the gold is turned down over the edges, to remove the spunk and with a round ball amalgam plugger, well polished, burnish all the places where the gold has slightly folded, or from any other cause not perfectly adapted; remove the matrix from the cavity, trim the cervical margin, just leaving enough lap over the edges, at the same time trimming any other surplus gold that is not needed.

The matrix is now placed on a sheet of mica and annealed, replaced in the cavity, and the swaging completed. Some have advised the taking of impressions of part of the adjoining teeth, that they may have something to guide them in contouring; but this complicates the work, as it is almost impossible to prevent the porcelain from flowing over such surfaces approximating the cavity. The use of wax has been suggested, but is of little value, except where pins are used or the cavity extends under the gum, as when you remove the spunk the gum forces the matrix up, and you are not sure that the matrix is perfect.

Such cases may be filled with wax rather stiff, forcing it with a flat burnisher, being careful not to use too much wax; and with a thin burnisher remove carefully all wax between the teeth at the cervical margin.

Vaseline is suggested for coating the cavity before making the matrix, but is of no use except to hold the matrix in place while burnishing the gold. The matrix is more easily adjusted when no fats are used. In removing the matrix, the best thing I have found is a spoon excavator; one that cuts by pulling, being made on the same principle as a hoe excavator. This is inserted in the bottom of the cavity, and with a slight pulling motion the matrix is loosened, when it may be teased out with any instrument convenient to the case.

INVESTING.—For this purpose Dr. Jenkins has suggested powdered asbestos. It has the advantage that it can be cooled off rapidly by allowing the bottom of the investing cup to come in contact with cold water. The gold is not so likely to burn. I have found it almost impossible to burn number forty gold in the Jenkins furnace when invested in asbestos. Investing is best accomplished by filling the cup, leaving it higher in the center. Place the matrix carefully on the high point, then with a small instrument tap the handle of the cup, or the cup, until the matrix settles down well to its place. Do not use force directly on the matrix under any circumstances.

To dry out the investment Dr. Jenkins uses a small flame from the blow-pipe about one inch from the handle, but in my experience it is less trouble to place the cup on a sheet of asbestos over the gas stove, turning the gas down low, so as not to boil the investment. Where wax is used place a small piece of spunk on top of the wax to absorb it as it melts, as wax is very likely to cause the investment to boil or puff up.

After the investment is dried out, it is cooled rapidly by holding the bottom of the pan in cold water. A tumbler filled to the top is the most convenient. Then, with a small medicine dropper, wet the investment with absolute alcohol, and keep it wet while placing in the porcelain. Mix the porcelain a little thinner than thick cream; then, with a flat burnisher, place in enough to half fill the matrix, tapping the pan to bring the alcohol to the surface and better settle the porcelain to its place. This may be repeated until the cavity is full.

It will be found necessary to add a few drops of alcohol from time to time to both the powder and investment. Should the porcelain flow over the edges, the surplus is best removed with a small camel's-hair brush wet and brought to a point by the tongue. If this is carefully done you need not have any overhanging edges. Place the cup on the stove, and in a few minutes touch a match to the surface of the cup and wait until the alcohol is burned out.

The filling may now be baked by gradually raising the flame with the blow-pipe, which, as a rule, will take about one to two minutes. This is very much quicker than an electrical furnace.

In baking it will be noticed that the porcelain will turn gradually dark and then red, when, as a rule, it will be baked enough for the first time. It is now removed from the furnace, cooled again in the water, and after it is partly cooled the porcelain and investment are made perfectly cool with alcohol. This is repeated each time until the matrix is full.

To prevent shrinking of contour and compound fillings some have suggested the use of pieces of Ash's teeth, but a better plan is to bake a button of porcelain to be used in the case at hand, as the filling will be more homogeneous. The button is baked on a piece of platinum, the pan being filled with asbestos fiber not wet. After baking remove the button; place it in a napkin or chamois skin, and crush up into small pieces. Then place as many pieces into the cavity as can be inserted without pressure, being careful that the pieces do not come up against the edges. Place large pieces in first, then fill in with the smaller pieces of porcelain; mix the porcelain rather thin, keeping the pieces and the investment wet with alcohol. Add the powder gradually, tapping the pan each time, so as to settle the porcelain in the bottom and between the pieces; build up well, dry out, and bake. If this be carefully followed out, one can bake the largest compound fillings without fear of bad edges in three bakings. No other precautions need be taken.

Only those who may have had the experience of baking compound fillings from six to ten times, then to find that one side does not fit, can appreciate what this means in the saving of time and positive assurance of perfect success in all cases.

I now use pieces of Jenkin's porcelain in all cavities, as one large piece is equal to one baking in small cavities and three to five bakings in large ones. The same process is used in contours of front teeth.

It is not necessary to use pieces of porcelain of the same shade as the tooth or the filling, but never use a darker shade. In the final baking it is necessary to hold it at the melting point a few moments longer, but care should be taken not to go above this unless it is desired to burn the filling a shade lighter. I make a number of buttons of different shades. This saves time when in a hurry.

In baking contours of front teeth, one is sometimes puzzled to determine just how high to build a contour. This can be avoided by taking the measurement of the cavity at its widest point with a pair of architect's dividers, sticking the points through a piece of paper, and label. This can be used for future reference in adjusting the dividers in baking. After baking the second time, the contour can be measured until it is exactly correct. The baking being complete, remove the gold and polish in round edges with a Perfection cloth disk of The S. S. White Dental Mfg. Co., using the coarse grit, and finishing with the cuttlefish or pumice disks. For cutting the grooves in the porcelain filling before setting, the best instruments I have found for this purpose are the small carborundum rubber disks made by Leaming, and sold by the Consolidated Dental Mfg. Co. They come in sizes as small as a diamond disk; can be kept at a knife edge by holding the disk against the carborundum wheel; they cut faster and last longer than diamonds.

CEMENTS.—Cement is one of the most important features of porcelain work. In simple fillings, where the walls are thick, the cement should correspond to the shade of the tooth. In contours, where the walls are thin, a cement near the shade of the tooth will show through the enamel, making it necessary to select a cement a shade darker than the tooth; or two mixings may be used in one cavity, the darker shade to line the cavity and a shade to correspond to the porcelain being used on the surface of the inlay. In this, of course, judgment will have to be used. Should the filling be lighter in shade than the tooth, a cement darker than the tooth and filling would be required, and *vice versa*. But it should be remembered that cements change the shade of porcelain in the same way that gold and platinum change the shade of Ash's teeth.

The cements most useful will be light pearl gray and pearl gray, brown, light yellow, and bluish white. The best cement for the purpose, in my experience, is Harvard.

After placing the inlay in the cavity, wipe off all surplus cement; then take a thin, flat burnisher and heat to a cherry red and press firmly against the filling. This may be repeated three or four times, until the cement is hard. Remove all the cement around the edges without interfering with them, and varnish or paraffin the filling until the next day, when, if necessary, the edges may be trimmed and polished. The Jenkins body will polish the same as Ash's teeth.

A METHOD OF MAKING ANTERIOR CROWNS.*

Dr. H. S. Abendschein showed a method of making anterior crowns. He first takes an impression of the front teeth, and from this cuts out the tooth corresponding to the one to be crowned, and with wax and plaster builds this up to the shape he wishes the crown to have when finished. The tooth so prepared is now varnished, and when the varnish is dry is rubbed with soap lather, as usual. He next places the rubber ring that comes with Melotte's apparatus on a slab of glass, and filling it with plaster, mixed thin, presses the prepared tooth into the plaster so as to get an impression of one-half of it. When the plaster is hard the tooth is removed and the impression soapstoned, and the tooth replaced. The ruber ring is then placed over the impression so as to extend above it as far as possible and yet remain in place, and filled with soft plaster as before. When this plaster is hard the two parts of the impression are separated, and both halves are brushed with powdered soapstone. Now replace the rubber ring on either half and press Melotte's moldine into the impression. Remove the plaster impression and pour Melotte's metal on this, and you have the die to swage one-half of your crown on. The die for the other half is made in the same manner from the other half of the plaster impression. Swage of twenty-two or twenty-four karat gold for the outside and twenty-two karat for the inside, twenty-eight gauge or thinner if you prefer, and cut away from the neck portions to admit the root to be crowned, and trim off the excess of plate and wire together carefully so that the edges will be in close contact, and solder; enough solder should be placed at the cutting-edge to strengthen it. Now grind off the surplus edges of the shell, and polish it and shape the neck of the crown so it will fit up under the gum, and cement in place.

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*From Cosmos

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

FOR CHAPPED HANDS AND LIPS.—This formula is about as nearly *perfect* as could be wished for: Glycerin 2 oz., Aq. dist. 2 oz., Ol. cajuputi xxx gtts. Perfume q. s. M.—*W. G. Steele, Medical Record.*

WHEN TO GET GOOD IMPRESSIONS FOR PLATES.—Plates made from impressions taken in the morning or early in the forenoon fit better than those made from impressions taken later in the day.—*F. Fourt, Dental Century.*

REMOVING TEETH FROM VULCANITE PLATES.—Dr. J. D. Kelly recommends placing a little wax on the plate previous to subjecting it to the heat, and letting it run over it. He says it will help to soften the plate, abate the odor and prevent discoloration of the teeth.

A SIMPLE METHOD FOR REMOVING BROKEN-IN PINS OF CROWNS.—Use a small cross-cut fissure-burr, and run it up one side of the pin to the end, and then carry a cut right through the pin from one side to the other. The two portions left of the pin were thus easily removed.—*G. Brunton, British Dental Journal.*

TO PREVENT WARPING OF VULCANIZED PLATES.—After vulcanizing high-arched rubber plates, allow tnem to cool very slowly so as to keep the different parts of the plate at the same temperature. This will prevent warping from unequal shrinkage, causing the plate to rock, although the usual amount of "relieving" has been done.—*F. Fourt, Dental Century.*

NICKEL MUFFLES FOR PORCELAIN WORK.—Nickel bids fair to supersede platinum in the construction of small muffles, in furnaces for fusing the low fusing enamels used in porcelain inlay work, and in the construction of crowns and bridges. The high fusing point, about 2810° Fehrenheit, enables it to withstand, at least for some time, the heat and impact of the gas blast, and to exclude from the work the damaging gases. Its comparatively low cost is another important item; rolled nickel costing about $1.25 per lb., while platinum is almost that per dwt. The platinum muffles are generally made very thin, and in use sag down in the centre. The nickel can be made any thickness desired.—*N. H. Keyser, Office and Laboratory.*

MOST DANGEROUS SOURCES OF INFECTION FROM SYPHILIS.—I understand Dr. Bulkley, in his paper, states that among the most dangerous sources of infection of syphilis are the rubber-dam, burrs, files, etc. I wish to add one to that, the impression-cup. It has been my invariable rule, in teaching and in practice, to insist that this should be thoroughly sterilized after it has been in a patient's mouth.—*J. H. Meyer, Cosmos.*

FOR SWEATING FEET.—

Formaldehyde	10 grains.
Thymol	10 grains.
Zinc oxide	7½ ounces.
Powdered starch	13½ ounces.

M.

Sig. Apply as a dusting powder.—*Medical Standard.*

BLACK RUBBER.—It frequently happens that in peeling the cloth separating the sheets of black rubber, this rubber will adhere so firmly to the cloth that it is next to impossible to separate it, and it has to be used in such small bits as we are capable of removing, which becomes very tedious and disagreeable. I have found, to avoid this, that if this rubber be cut into strips with the scissors, and thrown into a tumbler of cold water, the cloth may be readily peeled from the rubber.—*T. F. Chupein, Office and Laboratory.*

TO TEST THE ARTICULATION OF INCISOR TEETH WHEN MAKING A DENTURE.—Take a strip of cardboard, or a strip from a visiting card, about a half-inch wide, and, placing this between the upper and lower front teeth, while the plates are held together in the fingers of the left hand, draw on the strip with the right hand. If the strip resists the pulling, it shows that the front teeth are too close to each other and that they must be ground until the strip can be pulled between them freely. In relieving this pressure on the six front upper and lower teeth, these teeth may be cut with corundum points in the dental engine without mutilating their shape. If this pressure be permitted to remain uncorrected, the plate will be tilted from behind and the adhesion loosened. The same procedure may be pursued with the second molars.—*T. F. Chupein, Office and Laboratory.*

NICKEL USEFUL TO THE DENTIST.—Coin or five-cent-piece metal makes excellent bands in regulating appliances; it can be rolled as thin as the Angle metal for bands. It solders easily with silver solder or 18-karat gold solder. Coin silver will solder it, but with difficulty, as the copper in it oxidizes first. This metal also makes excellent screws and nuts. Nickel plate cut in narrow strips makes excellent strengtheners for rubber plates. These are similar to the Hall white metal bars.—*N. H. Keyser, Office and Laboratory.*

PASTEBOARD FOR VACUUMS.—A good and economical vacuum material is pasteboard, a box such as rubber comes in will do. I find that this makes a better vacuum than metal, as there is no danger of slipping or the corners cutting through the plate. My way of using the board is this: When ready to wax up my plate, I cut a vacuum of wax the size I want my board on, and put it in place, and then put my wax plate over it, then, when ready to pack my case, varnish with silax and put my pasteboard vacuum in, the size of the wax one. Anyone once using pasteboard will never use anything else.—*W. E. Dorset, in Dental Clippings.*

TO PREVENT PORCELAIN FROM BECOMING POROUS.—Dr. Head says: "There are very few porcelains that will not become porous if overheated. That is one of the most essential things, not to overheat the porcelain. It is not so difficult to fuse it as it should be fused, and a very little practice will make that a minor trouble. I have a piece of unbleached, unsized muslin, that I always keep to get my standard of moisture for my mixes. I take my colors as I think they ought to be mixed,—as a painter would. After making that mass quite wet, I take three or four thicknesses of the unbleached muslin as I would a piece of blotting paper, and take out all the moisture that will come out. When I have done that I build on my contour, tap on my pliers, and the moisture flows to the surface; then I turn it upside down upon the muslin and allow all the excess moisture to be taken out again, and then I put it into the oven and allow it to become chalk white, which shows the moisture is all gone, and then I proceed to the fusing." —*From Cosmos.*

To Make Up for Use Cuttings of "Ideal Dental Base Plate."—Put the scrap into a small jar or pan, place this into a larger pan, which fill with sufficient water to cover the pan containing the base-plate. Use for a lid an ordinary glazed tile or glass slab; boil until the base-plate is quite soft. Place the base-plate on the tile, which is now very hot; roll with a porcelain roller to desired thickness and cut into squares. The base-plate is then not only as good as new, but even better, as it is less brittle. I trust the above may prove useful to your correspondent.—*John Cromar, The Dentist.*

Adhesive Cement for Plate- and Bridge-work.—It is always desirable to have on hand a reliable cement for repairing plaster impressions, for the temporary adjustment of clasps upon plates, for the "waxing up" of teeth in plate- or crown-work, etc., and the following formula is presented for that purpose by Professor W. F. Litch:

Take of—

Pitch	100 grains.
Gutta-percha	100 grains.
Gum dammar	150 grains.

Process.—Melt the pitch in an iron pot over a sand-bath; cut the gutta-percha into small pieces, and add piece by piece, stirring constantly until all are thoroughly dissolved, then add the gum dammar, and continue stirring until it is melted and completely mixed with the other ingredients. Finally, pour the melted mass into a large basin of cold water, and before it has entirely hardened remove and cut into strips of suitable size.—*International.*

German Silver for Regulating Apparatus.—Dr. C. S. Case states in Cosmos: "I have found no other material that combines so many of the desirable properties as high-grade German silver for every part of a dental regulating apparatus, with an occasional exception. German silver, as you know, is an alloy of copper and zinc, or brass, with the addition of nickel. Some manufacturers add a small percentage of aluminum and iron. It is difficult, if not impossible, to obtain German silver from a dealer that is fit for immediate use in the construction of a regulating appliance. Manufacturers do not supply to the trade German silver wire above eighteen per cent. (which means eighteen per cent. nickel) except for specially large orders. In my experimentation I have found the twenty-five per cent. grade far superior in every way to the eighteen per cent. Besides its natural properties of flexibility, ductility, strength, etc., the higher grade is especially susceptible under proper manipulation of being made exceedingly rigid, a desirable property for jack and traction bars. With further drawing it is nearly as resilient as tempered steel, a property necessary for rotating and alignment wires, spring expanders, contractors, etc. Again, it can be made sufficiently soft and pliable to permit the most accurate adaptation. Its high fusibility permits the use of any of the gold or silver solders. Its deleterious influences as a metal in the mouth, for the short time it is worn, are no greater than gold. The danger in this particular lies far more in loose methods of construction and attachment of the apparatus, preventing the dislodgment of decomposing detritus. Its appearance when compared to gold is a real objection, but even this is largely obviated by electroplating, followed by perfect cleanliness in the mouth. Its cheapness is greatly in its favor, permitting, in infirmary practice, the lavish use and destruction of material for every appliance desirable, at a very small fee. Even in private practice the influence of its cheapness is toward the employment of more original and scientific methods. There will not be the same tendency to use certain stock material or parts of apparatus that you happen to have on hand with a very questionable endeavor to make them do, as you might if they were gold. Nor will you hesitate to cut away and remove apparatus or parts the action of which is found to be inadequate or not as anticipated, or that which the progress of the case has outgrown, with the view of substituting others better calculated to meet the demands."

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CONTRIBUTIONS.

AN INTERESTING CASE IN PRACTICE.*

BY G. A. KENNEDY, D. D. S., KENT, OHIO.

There are two reasons why I wish to present to you the following case in practice. First, because it was one of interest and anxiety, and second, because it may possibly prove beneficial to some of our younger members.

Early last spring a man of 35 years presented himself to me with an alveolar abscess. The roots of an inferior right first molar was the cause of the irritation. It being night, and the roots not perceptible, instructions were given for him to return on the next day in order to have the offending members removed. However, he failed to appear until some weeks later, when he presented a much larger face than on the previous occasion. Having nothing but artificial light, and the roots still being invisible, the gum was lanced, in hopes that pus might be reached, but all to no purpose. Then a probe was used, and again no pus. The patient was instructed to place a split raisin over the part where the abscess was most likely to point, and the fact emphasized for the patient to return the next day. This he did, when the roots were removed, but not a drop of pus came with them. Pain had ceased and the patient was given a quantity of listerine, accompanied by the words that the climax of the trouble was reached, and that, no doubt, the abscess would point either through the socket where the roots were extracted, or else where the gum had been lanced. But such was not the case. On the following day the man returned with his face still paining him, and, of course, more swelling, involving the submaxillary gland. Upon being informed that pus must be reached, he said he could not endure the probing again and returned home to use the raisin once more. After a few hours the family physician was summoned, who advised a poultice of hot flaxseed to be placed over the swelling. This was diligently pursued for several hours, when the physician desired me to call with him to see the case, the patient by this time not being able to come to the office. The swelling had extended well down on the neck, and it was with difficulty that the man could open his mouth. There was no sign of the pus pointing, and the hot poultices were continued. The swelling, however, increased, extending down to the clavicle, and up to the temple, while the tissues presented that boardlike induration, so often seen in such cases.

The pharynx and tonsils were badly swollen, and deglutition was performed with difficulty. It was now thought best to make an incision upon the face, where pus seemed nearest the surface. Again it was a failure, so on the next day the patient was taken to Cleveland to be operated upon. His temperature by this time was 102°, and it was deemed best to proceed with the operation at once. Chloroform was administered. An incision was made on the face parallel with the body of the inferior maxillary. Then by Hilton's method of opening an abscess, the long-looked-for pus was found, underneath the deep fasia. It was of a thick, creamy, consistency, with much odor. After removing as much of the pus as possible, and cleansing with bi-chloride, iodoform gauze was packed in the opening and the patient was dismissed. The wound was then dressed every other day with peroxide of hydrogen and a two per cent solution of formaldehyde until the patient showed signs of recovery when the dressing was less frequent. It was fully a month, however, before the patient was able to return to work.

Now to what point are we, as dentists, expected to treat such cases? Was not the case just reported in its last stages, outside the sphere of dentistry, unless, however, one is making a specialty of oral surgery? At first there was merely an alveolar abscess, but at the last there was a typical case of "Ludwig's Angina," the prognosis of which is often grave. Out of 58 cases reported and tabulated in literature, there was a mortality of 57 per cent.

In some cases pus was reached, while in others none was to be found. At times there will be intense pressure and swelling of the side of the face and neck, resulting from the roots of teeth, but without a drop of pus being present. This is how we are to tell whether or not a deep cervical abscess is forming: If pus is accumulating there will usually be a rising temperature, though not always. You will find, by carefully passing the top of your finger over the swollen part, a soft area. This area will present a dusky, reddish appearance, at other times there will be intense swelling from the chin down to the clavicle, showing that board-like "infiltration" so often seen. The treatment of these cases should be as follows: A tonic and cathartic should be administered. In the early stages of the swelling, poultices or hot fomentations ought to be applied until either the swelling subsides, or else there is a strong evidence of pus. When one is convinced that pus is forming, the case should immediately be turned over to a surgeon. The dentist ought no longer to retain the case when developments have reached this stage. It has gone beyond an aveolar abscess with extended inflammation, and has grown into a deep cervical abscess which is by far more serious. At this juncture no time should be lost in evacuating the pus. Even now there is danger of gangrene and edema of the larynx, which may necessitate the performance of tracheotomy. In severe cases retropharnyngeal abscesses have been known to form and then the pus may point into the pharynx or treachea, in such a quantity as to cause asphyxia. A number of serious complications may result from these deep-seated abscesses, but time forbids their enumeration. However, they are serious enough, and I believe it is our duty as dentists to remove every old root that is useless, even though at the time it may be causing no trouble. And in case we have an aveolar abscess, to remove that pus if such a thing be possible.

THE REPAIR OF FAILING GOLD FILLINGS BY THE USE OF AMALGAM.*

BY C. B. MOWER, WOOSTER, O.

Having been urged by your committee to prepare a paper for this meeting, we have, with some reluctance, consented to do so, not that we felt so much our ability to edify, but out of the belief that it is the duty of each member when called upon to respond, even though his efforts may seem to him to be of no value. It does happen now and then that great results spring from, or grow out of very feeble sources, and while what we shall attempt to say shall convey nothing new from a manipulative standpoint, we shall entertain the hope that some good may come to us and to the cause of humanity as a result of our effort.

It has been our practice for many years to resort to amalgam for the repair of such gold fillings as presented with recurrent decay occurring only about some limited portion of the filling. You all readily comprehend this condition. Such a point of decay may be excavated without dislodging the filling. If this is, therefore, successfully accomplished, and amalgam prepared and used in the ordinary way, such a point of decay may be effectually arrested. I might here detain you with a description in minutia of our procedure. As it is not our purpose so much to call your attention to any special mode of procedure as it is to call attention to what we believe takes place from a chemical standpoint, we will, therefore, refer to that at once.

First, those of you who have resorted to this measure will recall that amalgam so used in contact with gold acts very differently from what it does when used alone in a cavity. One of the most noticeable things, perhaps, is its color. An amalgam, such as we have at our disposal to-day, that used alone would preserve a bright or metallic appearance for years, will, when used thus in contact with gold, in a few days, or weeks at most, turn to an ebony black. This may not at first thought be considered to be of value, but on the contrary objectionable. We will frankly admit that a black filling is not a thing of beauty. But if we properly understand our mission as dentists it is to arrest decay and preserve the teeth. And, believing as we do, that this very simple measure of bringing gold and amalgam into contact in the same cavity results in some chemical reaction that proves effectual antiseptically, we can see no reason why it may not be more frequently resorted to. Just what this chemical reaction is we shall not ourselves attempt an explanation, but shall hope to find some of the members of this association who have become sufficiently interested to investigate the field and give us light. The theory held by some of galvanic action resulting, we feel satisfied cannot be held as valid. It may be, and no doubt is true, from a scientific point of view, but from a practical standpoint our experience is that no harm results. We have for years, as previously stated, followed this course, and have yet to know of a case resulting in any discomfort. You have all seen fillings of gold which after a time break down at some border, the greater part of the cavity remaining in good condition. If now, such a cavity be among the anterior teeth and the failing point on the palatial aspect, as it more frequently is (for very apparent reasons, which we will not stop here to consider), we may use this means of repair as the discolored parts are not presentable. And, if our observation amounts to anything, the amalgam so used while it in itself turns black there is not as much staining of the tooth as there is when amalgam is used alone. We will frankly admit that some of these statements do not seem plausible, and to those of you who have never made any observations we shall not be surprised if you are incredulous. An unbiased trial, however, we believe will convince the most skeptical of their truthfulness.

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*Read at Northern Ohio Dental Society, June, 1900.

As before stated, our past use of this measure has been confined principally to the anterior teeth. But we can see some ways in which the method may be used in bicuspids and molars to advantage. Of course, in such teeth as present failure on the lingual and palatal aspect, the same rules for repair will apply as in the case of anterior teeth. So much, then, for this measure as a means of repair and to avoid the necessity of removing the filling and resorting to a new filling entire.

We will next suggest some measures, which, while we have not tried, we cannot help but feel from the experience and observation we have had would be of value. Let us take the bicuspid teeth, for instance. Decay has made great progress, destroying the tooth far down on the neck, so far under the gum as to make the use of rubber dam very difficult, if not impossible. In such a case we would suggest the cavity be prepared as the operator may deem best, and filled carefully with amalgam, taking especial care to form and trim the cervical border correctly, the portions of the cavity, aside from this, need not receive such care at this time. After the amalgam has set, say on the following day, the dam may be applied, and the remaining portions of the cavity filled with gold. Two points would be gained by this course; first, the filling would be carried where gold could not with hope of success. Second, the gold in the lower portions of the cavity would be presentable and amalgam would not. Another gain, and one that those of you cannot appreciate who have not had your attention called to the antiseptic or conservative features of this union of metals, as against the use of either separately, is that the decay will the more certainly be arrested. There are also many conditions found among the molar teeth wherein this course will not only lessen the labor of filling but will increase our chance for success in saving the teeth. An instance of this would be where destructive agencies have caused large cavities on distal surfaces. Such cavities may be filled with amalgam and gold used in the coronal portions and mesial surfaces.

You say there is nothing new about all this, and we would answer nothing new from a manipulative point, but what we have sought to call attention to is the better saving of teeth by the use of gold and amalgam in contact in the same cavity. We have advocates of gold and tin, and we believe that such use of gold and tin has its good points. We have used Robinson's fibrous textile material in the cervical portions of cavities and gold to finish or contour, and believe the course commendable, but from what we have observed as resulting from the use of amalgam we cannot escape the conviction that there are chemical forces brought about by its use that we have yet to learn of, and which, when we shall have recognized the truth of, will have made a great stride in the saving of the teeth.

TREATMENT OF CHILDREN'S TEETH.*

BY G. H. ORMEROID, D. D. S., WARREN, OHIO.

Our work with children's teeth is necessarily limited, the object being to keep them comfortable for a few years. The mistaken idea which parents hold that the deciduous teeth may be neglected because they will eventually be lost, should be combated at every opportunity. The evils which follow neglect, I think, are familiar to us all. As far as the management of children goes, if we are kind and patient with them we will have but little difficulty in performing necessary dental operations.

The most trying cases with which we have to deal, and which occur with unpleasant frequency, are the treatment of pulp exposures and abscessed teeth. Where an exposed pulp is found, the cavity should be syringed with tepid water, relieving any pressure which may be on the exposed pulp, the cavity dried and a small pledget of cotton saturated with oil of cloves sealed in the cavity. If found advisable to destroy pulp in deciduous teeth, the cavity should be flooded with a paste composed of oil of carbolic acid and oxid of zinc. This, protected by temporary stopping, will, in the course of a week or two, result in the death of the pulp, which should be removed and the canals mechanically cleansed and filled. Iodoform, disguised with oil of cinnamon, I have found to give good satisfaction for root fillings in deciduous teeth.

The materials principally relied upon for filling children's teeth, I believe, are cement, gutta-percha and nitrate of silver. The last named material is especially useful. Our responsibility does not end with the shedding of the temporary teeth. Beginning with the sixth-year molars, we are given unlimited trouble, as so often they are mistaken by parents for temporary teeth. Special effort should be made to save these teeth, as the tipping forward of the second molars materially affects the articulation. As to the filling of permanent teeth, I think it is conceded to be the wiser plan to fill with temporary fillings, the cements preferred, renewing as occasion demands, until such a time as young

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**Read before the Northern Ohio Dental Association, June, 1900.

people are able to withstand a permanent operation, the age ranging from fourteen to eighteen years, unless in exceptionally small and accessible cavities, which should be filled permanently whenever circumstances will allow.

The hygiene of the mouth should not be overlooked. This we will have to impress upon the minds of the parents. Children should be taught to cleanse their teeth as regularly as they would their hands or faces, and only through the parents will this be done. The teeth should be brushed after each meal. If this rule cannot be followed, just before retiring at night is the most desirable time. A mild solution of reliable anti-septic mouth wash should be used each time; tooth powder once or twice a week.

Special cases present themselves at times which will tax our skill to the limit, but I have had to extract but few temporary teeth before nature had performed her wonderful work of absorption.

CHEMISTRY IN RELATION TO DENTAL SCIENCE.*

BY E. BALLARD LODGE, D. D. S., CLEVELAND, OHIO.

In the far distant centuries, when all that represents the profession of dentistry was in its embryonic state, there was also in process of development a science destined not only to play an incalculable role in the world's civilization, but a science which has done more for dentistry than any which has lent its aid toward the perfection of our beloved art. This science, born of avidity (and it has well been said that "true progress depends upon intelligent selfishness"), is said to have had its beginning as a science in the early part of the fourth century by the alchemists of Greece in their endeavor to extract gold from base metals. Many centuries earlier than this the Chinese, Egyptians and others possessed considerable chemical knowledge.

Dentistry is dependent for its successful practice upon several sciences, among which may be enumerated Anatomy, Physiology, Pathology, Physics and Chemistry. These are some of the fundaments upon which the structure of dental science is erected. All are essential; any one might be regarded the keystone of an arch in which its omission would cause the structure to fall. This being the case, it is difficult to say which study is the most important, but my purpose will be to show that chemistry is related to dentistry by the closest bonds, that it is our chief ally in the laboratory and operating room, and to demonstrate the importance of a higher appreciation of chemistry and its possibilities toward the improvement of dentistry.

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* Read before the Northern Ohio Dental Society, June, 1900.

In the laboratory we are in the habit of using plaster-of paris, and how many of us stop to consider that each time we mix this substance with water we are performing an experiment in chemistry? Plaster-of-paris, anhydrous calcium sulphate, unites with two molecules of water to form hydrated calcium sulphate ($CaSO_4, 2H_2O$). Calcium sulphate being sparingly soluble in water, causes the water to become hard; this we overcome by the addition of a little carbonate of soda, which by another chemical reaction causes the water to become soft again ($CaSO_4+NaCO_3 = Na_2 SO_4+CaCO_3$.

The vulcanization of rubber is a chemical process. Sulphur in the presence of caoutchouc or India rubber, which is a hydrocarbon, imparts hardness after exposure to the proper temperature for a certain time. The use of borax and other fluxes in soldering the metals, the refining of metals used in dentistry, is a series of chemical processes. Going now to the operating room, we are struck with the multiplicity of things in which chemistry plays a part. First of all we are indebted to chemistry for our instruments, without which dentistry would be in an exceedingly crude state. How would we open a cavity of decay without an instrument of steel? And steel is an artificial product of iron and carbon in chemical composition.

The various therapeutic agents, as peroxid of hydrogen, carbolic acid, tincture of iodin, ethyl chlorid, eucain, and a host of others are all due directly to chemistry for their production. In no department of operative dentistry is a knowledge of chemistry more necessary than in the process of tooth bleaching. Before going farther in this relation it may not be amiss to define the word chemistry. The term has been excellently defined as "that branch of physical science which treats of the atomic composition of bodies and of those changes in matter which result from an alteration in the kind, the number, and the relative position of the atoms which compose the molecule." In the bleaching of teeth we have a change in matter which results from an alteration of the atoms which compose the molecules of the organic coloring matter within the tubules of the dentin. Since the bleaching of teeth is a chemical process, the factors entering into the reactions are of first importance. On the contrary, if agents are employed without a knowledge of the reactions taking place, a worse condition may follow than existed in the beginning. To illustrate, suppose a tooth to be saturated with hydrogen sulpid (H_2S), a product of decomposing albuminous matter, and mercuric chlorid, ($Hg Cl_2$), be used as a disinfectant, the product will be black mercuric sulphid ($Hg S$). To show how chemism is involved in the process of bleaching a tooth, suppose a tooth to have recently assumed a pink color as a result of strangulation of the venous outlet of its pulp. This color is due to the presence of hemoglobin from the blood permeating the tubules. In this instance some agent of the dioxid series will be available; hydrogen dioxid ($H_2 O_2$), known also as peroxid of hydrogen or pyrozone, acts by giving off one atom per molecule of oxygen on coming in contact with the decomposing organic matter. This nascent oxygen, uniting with the pigmentary material, bleaching ensues. If, however, the discoloration from long standing has gone from the pink to the dark brown color, the process will be more difficult and involves other expedients. In this instance the hemoglobin has been decomposed into hematin and globulin. The cause of the color changes may be due to the formation of a compound of iron and sulphur, the iron being one of the original constituents of the hemoglobin and the sulphur from the protoplasmic cellular elements of the pulp. Assuming that it is the iron that causes the discoloration, we now look for an agent to dissolve it, so after using hydrogen or sodium dioxid and failing in restoring the color by this method, strong oxalic acid is employed to unite with the iron, forming a soluble and nearly colorless salt of this acid.

In the treatment of root canals for the purpose of disinfection the processes are purely chemical. Just as with bleaching, the sterilization of infected dentin and the removal of debris of organic nature from the tubuli all depend upon chemical processes.

We may practice dentistry in either of two ways: one empirically, depending upon the dictum of others not understanding why we do thus and so, or we may practice rationally, scientifically and understandingly. If we as dentists wish to be classed as scientific men, we must get as far as possible from empiricism. Says Dr. Kirk: "Chemistry, upon which more than any other factor an intelligent, rational practice of dentistry depends, more nearly measures up to the definition of an exact science than any of the medical or dental fundaments. Its phenomena of cause and effect are founded in mathematical relationships and its results are exact and definite." The very thing which has brought our profession into existence, that most universal of all diseases, caries of the teeth, is the result of unfortunate chemical processes. Dental decay and the train of diseases which follow it, as pulpitis, pericementitis, alveolar abscess, etc., are directly traceable to chemical solution and disintegration. Two groups of substances found in the human mouth affords sustenance to bacteria; they are, carbohydrates and albuminous substances. Upon these bacteria thrive and proliferate. From carbohydrates is derived acid, and from albuminous materials an alkaline medium. Putrefaction is another term for alkaline fermentation. Usually the mixture of the two mediums will procure an acid reaction. Certain bacteria produce lactic acid, which by its solution of the lime salts of the teeth develops caries. Caries unchecked usually results in pulp irritation and death, in which the necrotic tissue becomes a rendezvous of certain other bacteria which thrive on the albuminous material of the pulp and produce gases, which may help to account for the production of dental abscesses. If there is not adequate outlet through the crown of the tooth the gas formed may force itself through the apical foramen of the root and perhaps carry with it necrotic particles of pulp tissue, causing irritation and perhaps inflammation of the peridental membrane and its sequelae. The gases that develop within the pulp chambers of the teeth are

H_2S, NH_3, CO_2 and N, such disagreeable gases as are formed from putrefaction of organic material in general.

The accretion of salivary and serumnal calculi upon teeth is a further illustration of chemical processes, the salts of lime being precipitated from the saliva and from blood serum to produce these incrustations. The former is a notable cause of gingivitis, while the latter, if not a cause, is at least a frequent accompaniment of pyorrhea alveolaris.

An investigation of causes of failures of our fillings of oxyphosphate cements involves a knowledge of chemistry. It is a well known fact that these fillings often fail at the gingival margin of the cavities in which they are inserted, and especially in the bicuspid and molar teeth. The reason for the disintegration of fillings of this class is accounted for by Dr. Cassidy in this way:

The alkaline medium resulting from decomposition of nitrogenous material attacks the electronegative elements of the cement and disintegration ensues. The very benign influence of tin as a tooth filling material is to be ascribed to certain chemical reactions that follow its introduction into the cavity. Stannous oxid and sulphid are formed which act upon tooth substance in two ways: first, by the mechanical filling up of the mouths of the dentinal tubuli by these insoluble substances, and secondly by the antiseptic influence exerted by both the oxid and sulphid of tin. It has been observed that dental students persue the study of chemistry reluctantly. Why is this so, when the science means so much to the dental profession? Would not the dental colleges do well to have chemistry taught by dental chemists, who would inspire students with a greater enthusiasm for this important branch of their education? Students of pharmacy, it has been observed, make good dental students; and the National Association of Dental Faculties did well when they allowed graduates in pharmacy credit for one year's work in their dental course. An understanding of chemistry does not necessarily imply that a man be a skilled chemist. The objection might be made, that a man cannot know all professions. Nevertheless, man may have a good knowledge of astronomy and not know all the stars. Again, dentistry has not reached the height of its possibilities. We boast a great deal about the achievements of our profession in the past, and seem to have lapsed into a state of contentment and self-satisfaction, but at just the moment an individual or a profession becomes of such frame of mind then progress ceases, and retrogression is the inevitable result.

We, as dentists, if we wish to advance, must be awake and dissatisfied with our attainments to the extent that we will be zealous and enthusiastic for anything that will be of value to dentistry. Too many of us are apathetic and self-satisfied. We need more men in the field of chemistry; there are some, but the vast majority accept the fruits of their research in an empirical way, not understandingly. If they hear at all it is as if they listened to one speaking in an unknown tongue. Says Dr. Kirk: "The knowledge of chemistry is as essential to the practice of medicine in all its branches, dentistry included, as the multiplication table is to mathematics. Yet how few practitioners avail themselves of chemistry in their work." We need to study chemistry if we expect to discover the ideal filling material, and the writer is optimistic to the extent that he believes that it will be discovered within the next century, a material that will meet all the demands of color, durability, adaptability that may be desirable. Translucent, yet hard as enamel, forming a chemical union with the natural tooth tissue, and, in short, restoring teeth to usefulness and beauty in a manner scarcely dreamed of as yet.

Some may say this is too Utopian, but how about the telephone, Roentgen rays, wireless telegraphy, the photography of color, and a thousand other things developed in the past century? How about chloroform, nitrous oxid and the wonderful syntheses of the modern organic chemist? If these things had been predicted at the beginning of the last century would people have not said the man was a visionary dreamer?

The study of physiological chemistry ought to be encouraged to enable us to learn how to live and what to eat to endow ourselves and posterity with better physical organisms. If the laity understood more perfectly the chemistry of their bodies and the importance of a diet consisting of a due proportion of the elements that go to form teeth, fine white flour would be superseded by whole-wheat flour, and we would get an adequate proportion of the phosphates and carbonates of calcium which are now denied us by the tyranny of fashion. Do we know this to be a fact? If we do, then it is our duty to take the initiative in spreading the information to suffering humanity that future generations may be better specimens of beings "created in the image of God."

The subject has been treated in a feeble way, merely stating what is familiar to most dentists, and presenting a few of the chemical phases of dental practice; but the writer shall have realized his fondest hope if he succeeds in inspiring somewhat into his confreres a better appreciation of chemistry and an enthusiasm for a more thorough study, and a zeal for a better understanding of the laws of this noble science which invites us to make it one of our chief allies.

REPORT OF THE FOREIGN RELATIONS COMMITTEE OF THE NATIONAL ASSOCIATION OF DENTAL FACULTIES.

(Reported and adopted at Old Point Comfort, Va., July 14, 1900.)

During the past year the work of the Foreign Relations Committee has been materially extended. Advisory boards in most foreign countries have been provided for, and appointments made to fill them as fast as sufficiently definite information to enable the committee to do this properly could be obtained. Pamphlets containing an exposition of the work and the aims of the National Association of Dental Faculties have been printed and circulated in foreign countries, and a number of circulars of information for members of our foreign advisory boards have been printed and mailed to them. In addition, as directed by the association at its last meeting, a pamphlet containing digests of the reports made at that meeting has been printed and mailed to each member of the association, and to other interested members of the profession in America and abroad.

All this has involved considerable expense for printing and postage, but we believe it has been a wise expenditure of money, as by its means the dental profession of the world has been made aware of the existence of an association of the regular and recognized dental schools of America which is devoted to the advancement of the cause of dental education and to the elevation of the status of dentistry among all nations.

It is unfortunately the fact that, because of the lack of uniformity in the educational systems of the different states, and the absence of any general supervisory authority on the part of the national government, under some unwise local legislation it has been possible for irresponsible, unqualified, and unscrupulous men to secure charters for institutions empowered to grant degrees, and under such authority to issue, for a consideration, irregular and fraudulent diplomas. This traffic has principally been with men in foreign countries, who, primarily the guilty ones, have sought to obtain academic honors without the labor necessary honestly to acquire them. As these institutions have been conducted under pretentious names, it was formerly impossible for foreigners who had no intimate acquaintance with American educational affairs to distinguish between the regular and the irregular schools. The organization of this association has established a criterion by which they may be judged, only those owning allegiance to the National Association of Dental Faculties being recognized.

It is unfortunate that the professional situation in America has not in past years been better comprehended in Europe. All our schools have been held responsible for the vile works of the fraudulent ones—nominally located in this country, but chiefly supported by unprofessional men from abroad. There has even been a grave misapprehension of the objects of this association, and the work of the Foreign Relations Committee has in some instances been totally misconstrued. All of us are aware that while some of the very best and ablest American representatives have located in foreign countries, and to whose professional career we can point with pride, it is unfortunately the case that some Americans of a different professional reputation have gone abroad and have indulged in practices as offensive to our foreign *confreres* as they are to reputable American practitioners. There are many more unworthy foreigners who have legitimately or illegitimately become possessed of an American degree, and who, without warrant of right, claim the title of "American dentist."

The belief is prevalent in certain foreign professional circles that it is the aim of the National Association and its Foreign Relations Committee to obtain for all such persons professional recognition, and to demand the acceptance of their American degree by the governments of foreign countries. It is but proper that we should in the most authoritative manner deny any aspirations of the kind. This association has not in the remotest manner contemplated any interference with or protest against the laws or regulations governing the practice of dentistry in any foreign country. It has not primarily been the object of either the National Association or its Foreign Relations Committee to attempt to secure for the American dental degree any legal recognition as a qualification for foreign practice. It is not usual in the American states which have legal professional regulations to receive the diplomas of any foreign professional school as a qualification for practice, and we cannot consistently ask that which we refuse to others.

It seems but proper that we should publicly avow the reasons that have prompted the better colleges to form this association of schools, and to appoint a committee charged with the duty of harmonizing our relations with the dental profession in other lands. We seek for the distinctive American dental diploma nothing more than the consideration which its merits demand. If its reputation has been debased by the circulation of counterfeit diplomas, it is something for which we are in no way responsible. In the formative educational period, when dental schools existed nowhere save in America, and when even dentistry itself was undefined, empirical, tentative, with no distinctive line of practice and no clearly prescribed curriculum of study, the newly adopted degree may have been conferred in some instances on insufficient acquirements. The experiment of establishing a special dental educational course of study, and thus laying the foundation for the broad profession which exists in all civilized countries to-day, was first tried in America, and here tested for the whole world. There were no precedents for our guidance, and no earlier successes or failures to stand as landmarks. We were the absolute pioneers, and it would be little wonder if we made some errors.

Since that day other countries have drawn professional lines, and marked out, each for itself, a distinctive course of procedure. Each of these somewhat varies from the others, and perhaps all from that originally established in America. If dentistry is to be accepted as a profession at all, or as a distinct branch of a great mother profession, it must be broader than is any state; it cannot be confined by any bourne, nor limited by mountains, rivers, or oceans. There should be no American, English, German, or French dental profession, except as each is a part of one undivided whole. Realizing all this, the National Association of Dental Faculties was organized for, and has been constantly laboring to attain, these definite purposes:

First. To establish a broad and generally accepted curriculum of dental study, and by the combination of all the better dental schools of America to bring each up to a uniform standard of excellence.

Second. To establish a clear line of demarkation between the regular and the irregular schools, and to force out of existence the latter.

Third. Gradually to raise the standard of preliminary education until none but such as have the general erudition that should distinguish a professional man can be accepted in American dental colleges.

These were the principal objects in view, and in the attainment of them success has been secured exceeding the most sanguine expectations of the founders of the movement.

In the development of its plans the association met with many obstacles, and found itself laboring under great embarrassments. One of the chief of these was the lack of information concerning professional affairs in foreign countries. The association decided, so far as was in its power, to co-operate with the worthy dentists of other countries in the laying down of certain broad principles which must be the foundation upon which any true professional practice could rest. Any international co-operation must be based upon a complete knowledge by each of the methods and aims of the others. There can be no concurrent effort without mutual comprehension and intelligence.

Another perplexity was found in the fact that in establishing the preliminary qualifications for matriculation in American colleges there was no rule by which to judge of the value of certificates presented by foreign students. After completing the course of some foreign school, a student, who perhaps spoke only a strange language, sometimes desired to conclude his studies by taking as much of the American course as would enable him to finish it, and he demanded of some American college advanced standing of one or more years. His certificates were in a foreign tongue, and in some instances were found either forged or not that which they were represented to be.

In this emergency, at the earnest request of certain American dentists practicing in foreign countries, who had been scandalized by the acceptance in America of students with improper certificates, a committee, to be called the "Committee on Foreign Relations," was appointed, and was charged with certain definite duties:

First. It was to be in all things subordinate and subservient to the National Association of Dental Faculties, to which body it must make a full report each year.

Second. It was empowered to appoint advisory boards of not more than three members in each foreign country having any professional relations with America, whose reports concerning foreign qualifications might form a basis for action in this country.

Third. It was to have jurisdiction in all foreign educational questions affecting American dental colleges.

Fourth. It was to obtain definite information concerning dental regulations and laws in foreign countries; to learn what were the curriculum and requirements of all foreign dental schools, with the view of determining what value should, under American laws and regulations, be given their certificates of study, either as a qualification for dental practice in America or for admission to advanced standing in American dental colleges.

Fifth. It was charged with the duty of ferreting out institutions engaged in the granting of irregular degrees or degrees irregularly, and instituting measures for their suppression.

In compliance with the first enumerated duty your committee makes this report of what it has done during the past year, and appends the recommendations for future action which its experience leads it to believe advisable. It has earnestly striven to carry out what its members believed to be the wishes of this association, and it has had no policy of its own to inaugurate or attempt to enforce. It has in all things been governed by what it believed to be the spirit of its instructions.

Concerning the second business with which it was charged, your committee begs to report that it has divided the various countries of both the Eastern and Western Hemispheres into convenient groups, and has appointed boards for each, so far as the information obtainable has warranted. In making such appointments it has deemed the following qualifications essential:

First. The appointee should be a regular and reputable dentist, possessing the legal qualifications of the country which he represents.

Second. He must be a graduate of some reputable American dental school, or possess an acquaintance with the curricula of American schools, and be familiar with American dental professional methods. The list of such appointments is appended for the approval of this association.

In the discharge of the third duty imposed upon us, your committee has met with great embarrassments. At the very outset colleges, members of this association, appealed to us to know what consideration should be given to certificates showing that proposed students had taken the full course in schools located in Japan and Mexico, which purported to teach the whole dental curriculum. Your committee could not learn that any schools giving a course in dentistry that could be accepted as an equivalent for any part of that demanded by this association existed in either country. They therefore ruled that students from either could only be accepted as members of the freshman class of American dental colleges, and only they if they complied with the rules of the association so far as preliminary education and a knowledge of the English language are concerned. This ruling was cheerfully accepted by the schools that had raised the question, and we present it as an encouraging proof of the loyalty and anxious desire for a high standard that exists among the recognized dental colleges of America.

But the discussion of this raised the question of the consideration that should be given to the certificates of study from any foreign dental school. Our rules provide that no credit shall be given to certificates from any American dental school whose curriculum and regulations have not received the formal approval of this association. Could we, in the name of the National Association of Dental Faculties, approve the giving of advanced standing to students from the schools of other countries that had not the same stamp of regularity? That is, could we extend to foreign and unknown dental teaching institutions privileges that were positively forbidden to American schools? And yet the responsibility of deciding this question had been thrust upon us by this association, and we could not evade the obligation. It took but a short time to arrive at the inevitable conclusion that we could not approve the giving of advanced standing to graduates or undergraduates of any foreign dental school whatever until such school had received the formal indorsement of this body.

Fortunately, few of these questions arose in time to affect any student for the term of 1899-1900. We informed the colleges presenting the cases that the matter would be referred to this annual meeting, and the committee is prepared to offer certain recommendations for the recognition of foreign schools, based upon such knowledge as we have been able to obtain. The whole matter is referred to this body for final adjustment.

In the discharge of the fourth duty that devolved upon us, your committee is in possession of a very voluminous mass of correspondence and reports, which it has earnestly labored to reduce to some system. The advisory boards appointed have, in a considerable number of instances, forwarded as full information concerning dental schools and the regulations governing dental practice in the countries represented by them as could be obtained, and it is upon such reports that the recommendations of your committee are wholly based. How much of them shall be given to the porfession of America by publication must be decided by the association. It would be quite impossible to print the great mass of corespondence unless a large volume should be devoted to that purpose.

Under the fifth head, your committee begs leave to report that a great deal has been accomplished. The same legal counsel employed last year has been retained, and the same general course has been pursued. It is probable that more fraudulent diplomas have been sold in foreign countries during the past year than ever before. This is due to the fact that those who have been carrying on the traffic realize that, because of activity in their prosecution, the time for accountability is near at hand, and they are striving to make the most of the present opportunity.

It is urged by foreigners that this business should be summarily stopped. Such people little know the difficulties in the way. In the first place, the traffic is mostly with foreigners. As their illegitimate diplomas are wholly worthless in this country, no State Board of Examiners recognizing them in any way, those who are engaged in the business carefully cover their tracks, and no responsible man can be located. Attempts to entrap them by means of decoy letters have failed, some such having crossed the ocean a number of times without delivery, being forwarded from one of their foreign agents through whom the nefarious business is carried on to another, until finally returned to the writer by the post-office authorities. Fictitious names are signed to the pretended diplomas, so that it has been found almost impossible to fix the guilt upon any person. Our friends in foreign countries have contented themselves with bitter reproaches against American colleges generally, without forwarding any testimony that would assist in the discovery of the guilty ones. The fraudulent institutions could not by foreigners be distinguished from the regular colleges, for they were in possession of charters regularly granted under a vicious law of the State of Illinois, whose entire repeal it had been found impossible to secure, because the interests of legitimate enterprises were inextricably bound up with the illegitimate ones.

Your committee early discovered that working alone it could accomplish little. The Board of Health of the State of Illinois was taking the matter up, and they possessed advantages for the prosecution of the lawbreakers which were not within our reach. We have therefore contented ourselves with co-operating with that board in every way possible, and our counsel has been instructed to offer them any assistance within our power. As a consequence we have great pleasure in reporting that, acting under the United States law, which forbids the use of the mails for fraudulent purposes, the worst of these offenders have finally been apprehended and committed to jail in default of the heavy bail that was demanded. What is of more importance, if possible, the United States mails are closed against the transmission of their correspondence, and letters to or from them are promptly sequestrated.

The greatest offender was last year named in this report as "The Independent Medical College of Chicago." We secured the annulment of the charter of this affair, but in a very short time we found that the same men were yet engaged in the business under the name of "The Cosmopolitan Medical College." They had offered for sale no less than thirty-six different diplomas in all the branches of science and art, and since the forfeiture of the charter under which they first worked it is believed they have sold more than a thousand fraudulent diplomas, at prices varying from ten to five hundred dollars each. Proof sufficient to secure the cancellation of the first charter was only obtained through the inordinate cupidity of the man who was chiefly responsible. He paid a debt of some thirty dollars due to a stable-man, or hostler, by issuing a diploma to him and making him a professional man. The recipient, when he found himself under arrest for attempting practice under it, betrayed the swindler, and we were thus able to fix his guilt.

The late proceedings against this man and his associates have developed the fact that they were in possession of no less than *twenty-four* different charters, all regularly issued under that mischievous Illinois law, which was enacted for beneficent purposes. We have now learned the methods of these men, and it is believed that it will soon be possible to put an entire stop to their villainous traffic, through the imprisonment under the United States postal laws of those engaged in it. Too much credit cannot be given the Board of Health of the State of Illinois for the active part it has taken in the suppression of these miserable pretenders that have so long been bringing discredit upon our legitimate and excellent educational institutions.

In view of the fact that the other work of the Foreign Relations Committee is more than sufficient to engage all its surplus energies, and in further consideration that the work of the suppression of the fraudulent schools is now well in hand and the path for action fully defined, your committee recommends that this work be, for the future, placed in the hands of the Committee on Law, which shall receive the same instructions as those heretofore given the Committee on Foreign Relations.

The progress that this association is making in its efforts to raise the status of professional teaching in our own country, to obtain a better appreciation of American professional affairs in foreign countries, and to maintain steady advancement toward a dental solidarity among all nations is very encouraging to every lover of humanity. It is true that even at home there may in uninformed circles yet be found some remnants of an unworthy professional jealousy, a failure to comprehend the real educational situation, and a tendency to attribute to our teachers motives unworthy any honest man. But the steady, persistent work of this association in elevating the accepted standard just as fast as prudence permits, has wrought a great change in professional sentiment and immeasurably benefited the schools, and through them the profession at large. It only remains for us to continue this good work a few years longer to produce results that will be permanent in their character, and so firmly established as henceforth to be self-sustaining.

Report Concerning Foreign Equivalents.

Your committee has very carefuly considered a great mass of correspondence and many voluminous reports, and begs hereby to submit the conclusions which it has reached. It must not be forgotten that the system of dental instruction in Europe varies very widely from that of our special American dental schools. Instruction separate from that given in the medical schools or universities is very rare, and the practical training which forms a part of our curriculum is usually given by private preceptors.

Your committee does not feel at liberty to recommend the acceptance of an oral and theoretical course as the equivalent for one including practical work. We cannot believe that the certificates of private and irresponsible practitioners can by us be accepted as any part of a college course, and hence we have given them little consideration. It is quite probable that in some instances we have recommended that one year's advanced standing be given the holders of some certificates when further knowledge might show that they should be admitted to our senior classes, but we have thought it wisdom to err, if any mistakes are made, upon the safer side, as future action can readily correct any such errors.

Australia.

A very complete report from the various colonies of Australia and New Zealand has been made by the advisory board appointed for those countries. It would appear that in most of the colonies there is no dental legislation, but Victoria has lately secured a law analogous to that of England, and in Melbourne a dental school has been organized whose curriculum, from the partial syllabus furnished, seems to be a comparatively broad one. The dean of the "Australia College of Dentistry" is an American graduate, and he appears to have the confidence of the dentists of Australia.

Your committee is unable positively to determine whether the school in all respects comes up to our minimum requirements, but this it has directed its chairman definitely to ascertain, after which your committee will be prepared to recommend to this body some proper action. There has also been established in Melbourne, Province of Victoria, the "Dental College and Oral Hospital of Victoria," but your committee is not at the present time in possession of sufficiently definite information to enable it to offer any recommendation concerning it.

In the provinces of Western Australia and Tasmania no dental legislation has been secured.

There is a dental law in New Zealand, and the member of the advisory board from that province has furnished your committee with an abstract of it. There are no dental schools in the province.

Switzerland.

Full reports from this country have been furnished by Dr. Bryan. It is a republic analogous to our own country in some respects, the federal union being composed of separate cantons. There are some excellent universities which offer certain facilities for dental study, but their practical instruction, we believe, cannot be accepted as an equivalent for that offered by American dental colleges. Your committee recommends that holders of the Swiss national diploma be given one year's advanced standing in the schools of this association, but that no consideration be at present extended to holders of the cantonal qualifications.

Spain.

Complete reports have been furnished by members of the advisory board. The Spanish requirements in medicine are very high, but your committee cannot find that there are any dental schools, or dental departments of universities, whose course of instruction can be accepted as the full equivalent for the instruction given in American dental colleges.

France.

Your committee is aware that separate dental schools exist in France, and its chairman has been in daily expectation of receiving their curriculum of study, but up to this time has been disappointed. Without this exact knowledge the members do not feel themselves justified in recommending any action, for we cannot proceed in so grave a matter upon mere assertions or impressions. As members of your committee will visit France in the immediate future, and will carefully investigate the course of study, we ask that we be given authority to incorporate our recommendations in this report after such investigation shall have been completed.

Germany and Austria.

The dental schools of these countries are departments of the universities, and only university students attend them. The instruction consists of lectures and clinical work given by from one to three dental professors, who lecture upon the different dental subjects. Instruction in chemistry and allied studies is afforded in the School of Philosophy or Science; in anatomy, physiology, etc., in the School of Medicine. No special instruction is given dental students except by the very few dental teachers. The clinical instruction is largely devoted to extraction and oral surgery. The practical work is usually quite limited. There is no obligatory course, but students enter for such lectures as they may choose, paying the fees of each professor separately. There are no obligatory hours for study or lectures.

The mechanical instruction consists of lectures on the principles of mechanics, the practical work being usually done in private laboratories. The examinations have very little resemblance to ours, each teacher asking three questions out of a list of forty approved by government. They are not usually as exhaustive or comprehensive or scrutinizing as ours. The licensing or approving power rests with the "Kultus Ministerium," or department of religion and education. The great majority of dentists in practice are Zahntechnichers—mechanical dentists—upon whose work no restrictions are placed, as they are not recognized by the government.

Your committee recommends that students speaking the English language, who have taken the full dental course in German or Austrian universities, be eligible for reception in the junior classes of American dental colleges, provided it be shown that they have had at least two semesters of competent college instruction in practical laboratory and operative work. It further recommends that students speaking the English language who have had at least four semesters of such instruction in operative and prosthetic practical courses, and who shall have finished the dental course in the University of Berlin, or in any German or Austrian dental school whose course of instruction offers a full equivalent, be eligible for admission to the senior classes of accepted American dental colleges.

Italy.

In Italy the practice of dentistry was long without special restrictions. Then an attendance upon lectures in a medical school was required, and a dental diploma was issued. In 1892 a law was passed which required dentists to obtain a medical diploma. This was not enforced until 1898, when a movement against foreign practitioners was inaugurated. They appealed to the courts and carried the matter to the supreme court, which decided that those in practice previous to 1888 had rights which could not be abrogated. At present the law of 1892 is in force, and this requires a medical diploma for the practice of dentistry and phlebotomy.

There are, we believe, no schools in Italy which have courses that can be accepted as equivalent to those of our American dental schools. The instruction given in the medical schools your committee believes to be too exclusively general in its character to form an acceptable course in dentistry for American students.

Mexico.

There is a medical school in the City of Mexico which purports to give dental instruction. Your committee cannot learn that it is of such a character as will enable it to be accepted as the equivalent for a course in an American college.

Japan.

There is one dental school in Japan—that of Dr. Takayama, in Tokio. It confers no degree, but gives a certificate which entitles the holder to government examination, the same as if he had studied with some practicing dentist. As the instruction is personal and the school is quite irresponsible, your committee believes that no consideration can be given to it.

Holland and Belgium.

In these countries the title of dentist is obtained by passing a practical examination in the theory and practice of dentistry. There are no separate dental schools, and we are not sufficiently informed of the comprehensiveness of the syllabi of the universities to offer any recommendations concerning them.

Great Britain.

There can be no questioning the fact that England has some excellent dental schools. The only embarrassing circumstance in the determination of their status relative to ours lies in the great difference between the educational systems of the two countries. Undoubtedly they place greater stress upon preliminary educational requirements than do we, but your committee is of the opinion that our practical instruction is superior. Originally, we believe, there was little instruction given in prosthetic work during the term of attendance upon hospital lectures. Students were supposed to come to the college for didactic instruction, the practical part having been previously communicated by a preceptor. It should be comprehended that English dentists frequently employ a mechanic, who is not required to possess any special educational qualifications, the registered dentist mainly confining his attention to the operations of the surgery or operating room.

In this country we believe the practical work of the laboratory should form a part of the college course, and we do not graduate a student until he shall have satisfactorily completed the whole curriculum within the college walls. We are under the impression that the English system is undergoing a change in this respect, and that practical laboratory work will soon form a part of the obligatory college course. We recommend that all students who shall have finished the complete course in any recognized English, Irish, or Scotch dental school or hospital shall be eligible for reception as senior students in American dental colleges upon proof of their having taken as a part of such course two years of instruction in a properly equipped dental laboratory and dental infirmary connected or affiliated with such dental school or hospital, and which requires the successful completion of the work deemed essential by recognized American schools, as formulated in the minimum requirements for foreign dental schools accompanying this report. We further recommend that for the present no consideration be given to partial courses in any of the dental schools of Great Britain.

Sweden.

Very complete reports have been furnished by the chairman of the advisory board, Dr. Forberg.

The country has one dental school, which is the dental department of the "Carolina Medico-Chirurgical Institute of Stockholm." Instruction is given by five professors of the medical department, and there are three dental professors, occupying respectively the chairs of dental surgery, operative dentistry, and dental prosthetics and orthodontia. From the assurances given by Dr. Forberg, your committee believes that its graduates should be permitted to enter the second-year class of recognized American dental colleges, provided they shall have complied with our requirements concerning mechanical laboratory work.

Your committee has not sufficient knowledge concerning this school to warrant further recommendations at present.

Canada.

In the Dominion of Canada there is but one school which demands consideration, and that is a member of this body. Yet the educational systems of the two countries, especially in professional matters, are so different as to engender continual embarrassments. Canada being a foreign country, your committee has felt itself bound in duty to place it in the list of those countries whose relations with us must be taken into consideration. The dental educational system of Ontario approaches more nearly that of England than that of America. It has an analogous system of indentures which the dental student must sign, and private preceptorship forms a portion of its obligatory instruction.

This is directly at variance with our system, which accepts no tutorship by irresponsible parties. The dental law of Ontario forbids the entrance upon practice of any one who has not taken his final course of instruction in the Royal College of Dental Surgeons of Ontario. We believe that this principle is the correct one, and that the same rule should be made applicable in the United States, and that here, as there, no foreign qualification should be sufficient for registration in the various states of America. But the membership of this foreign school in our association presents an embarrassment which for the present seems insuperable, and your committee, therefore, has no recommendation to make, but leaves the matter for future consideration in the hope that some code of international agreement may be devised which will give to the graduates of America's recognized colleges who desire to practice in Canada the same privileges extended to the alumni of the excellent Ontario dental college.

Concerning other foreign countries, your committee is not in possession of sufficiently definite information to warrant any action whatever. We have no knowledge of the existence of any courses of instruction which can be accepted as an equivalent for courses in the institutions having membership in this body, and therefore advanced standing in our schools cannot in justice to our own students be granted, save in the instances above enumerated. The committee will gladly make use of any further information which may be furnished them, and will, in the furtherance of the duty with which they are charged by this association, embody such knowledge in future reports.

REPORT OF F. R. COMMITTEE.

Report Concerning the Minimum Requirements to be Demanded by the National Association of Dental Faculties for the Recognition of Foreign Dental Schools whose Students Desire Advanced Standing in the Colleges Belonging to the Association.

1. The college must require of matriculants a preliminary education which is the full equivalent of that demanded by the schools of this association.

2. The college must demand of students full attendance upon at least three full annual courses (not semesters) of lectures of not less than seven calendar months each, in separate years, covering all the studies proper to a full dental curriculum.

3. The college must possess a bacteriological laboratory, with sufficient of equipment for instruction in a competent course in bacteriology, which must form a part of its curriculum of study.

4. The same must be required in chemistry, histology, and pathology.

5. There must be a technic laboratory in which shall be taught the proper manipulations for the insertion of all kinds of fillings for teeth, the preparation and filling of the roots of teeth, the tempering and shaping of instruments, the drawing of wire

LIST OF THE COUNTRIES FOR WHICH ADVISORY BOARDS HAVE BEEN DESIGNATED.

COUNTRY	NAME	COLLEGE	POSTOFFICE ADDRESS
Great Britain.	Wm. Mitchell, D.D.S.	Univ. of Michigan.	39 Upper Brook st., London, Eng.
" "	W. E. Royce, D.D.S.	Phil. Dental College.	2 Lonsdale Gardens, Tunbridge Wells, Eng.
" "	B. J. Bonnell.		94 Cornwall Gardens, So., Kensington, London.
Holland and Belgium.	J. E. Grevers, D.D.S.		13 Oude Turfmarkt, Amsterdam, Holland.
" "	Ed. Rosenthal, D.D.S.	Harvard University.	19 Boul. du Regent, Brussels, Belgium.
" "	C. Van der Hoeven, D.D.S.		Der Haag.
Denmark, Swe. & Nor'y.	Elof Forberg, D.D.S.	Phil. Dental College.	Sturegatan 24, Stockholm, Sweden.
" "	S. S. Andersen, D.D.S.	Univ. Pennsylvania.	Christiania, Norway.
" "	L. P. Vorslund-Kjaer, D.D.S.	Phil. Dental College.	Copenhagen, Denmark.
Russia.	H. V. Wollison, D.D.S.	N. Y. Coll. Dent.	10 Quai de l'Amaranti, St. Petersburg, Russia.
"	Theo. Weber, D.D.S.	N. Y. Coll. Dent.	Helsingfors, Finland.
"	Geo. Th. Berger, D.D.S.	Phil. Dental Coll. '77.	St. Petersburg, Russia.
Germany.	W. D. Miller, D.D.S.	Univ. Pennsylvania.	Victoriastrasse 30, Berlin, Germany.
"	C. F. W. Bodecker, D.D.S.	N. Y. Coll. Dent.	55 Unter den Linden, Berlin, Germany.
"	Friedrich Hesse, D.D.S.	N. Y. Coll. Dent.	Goethe Str. 6, Leipsig, Germany.
Austria and Hungary.	Dr. Szigmondi.		
" "	Dr. Waeisser.		
" "	Dr. Arkovy.		
Italy and Greece.	Albert T. Webb, D.D.S.	Univ. Pennsylvania.	87 Via Nazionale, Rome, Italy.
" "	Tullio Avanzi.		
" "	A. V. Elliott, D.D.S.	Univ. of Mich. '87.	10 Via Tornabuoni, Florence, Italy.
France.	J. H. Spaulding, D.D.S.	Univ. Minnesota.	39 Boul. Malesherbes, Paris, France.
"	I. B. Davenport, M.D.	Coll. P. & S., N. Y.	30 Ave. de l'Opera, Paris, France.
"	G. A. Roussell, D.D.S.	N. Y. Coll. Dent.	74 B'd Haussmann, Paris, France.
Spain and Portugal.	R. H. Portuondo, D.D.S.	Unv. Pennsylvania.	Paseo de Recoletos 3, Madrid, Spain.
" "	Florestan Aguilar, D.D.S.	Phil. Dental Coll.	Serrano 5, Madrid, Spain.
" "	T. J. Thomas, D.D.S.		Bilbao, Spain.
Switzerl'nd and Turk'y.	L. C. Bryan, D.D.S.	Boston Dent. Coll.	1 Steinenberg, Basel, Switzerland.
" "	Theo. Frick, D.D.S.	Univ. Pennsylvania.	14 Tonhallenstrasse, Zurich, Switzerland.
" "	Paul J. Guye, D.D.S.	Penn. Dent. Coll.	12 Rue de Candolle, Geneva, Switzerland.
Japan, China and India.	Louis Ottofy, D.D.S.	Western Dent. Coll.	87 Main street, Yokohama, Japan.
" " "	J. Ward Hall, D.D.S.		Shanghai, China.
" " "			
Austrl. and New Zeal'd.	Alfred Burne, D.D.S.	Phil. Dent. Coll.	1 Lyons Terrace, Liverpool street, Sydney.
" "	A. P. Merrill, D.D.S.	Phil. Dent. Coll.	52 Collins street, Melbourne.
" "	Herbert Cox, D.D.S.	Univ. of Mich.	216 Queen street, Auckland, New Zealand.
Cuba and W. Ind. Isl'ds			
" " "	Rice R. Buchanan, D.D.S.		47 San Francisco street, San Juan, Porto Rico.
" " "			
Mexico and Cent. Amer.			
" "			
Venez., Col. and Ecua.			
" " "			
Peru, Bolivia and Chili.	S. R. Salazar, D.D.S.	Chi. Coll. Dent. Surg.	Lima, Peru.
" " "			
Brazil and Guiana.			
" "			
Arget., Para. and Uru.			
" " "			

and tubing for cases in orthodontia, and the cutting of bolts and nuts.

6. There must be prosthetic laboratories sufficiently equipped for teaching all kinds of prosthetic work, and the construction of all the approved prosthetic appliances.

7. There must be a sufficiently equipped laboratory for instruction in making crowns and bridges, and the construction of appliances used in orthodontia.

8. There must be a properly equipped infirmary or surgery for the reception of patients, upon whom each and every student shall be required individually to perform all and enough of the operations necessary in dental practice thoroughly to qualify him for the successful pursuance of his profession.

9. Complete records of the work done by each student, of his attainments at sufficient and full examination in each subject of the curriculum of study, of his attendance and deportment during the course, must be permanently kept.

10. No credit must be allowed for any work not done under the immediate supervision of instructors connected with or especially approved by the college, and who are in direct affiliation with the faculty.

On the preceding page is a list of the countries for which advisory boards have been designated, and the appointments and nominations so far as made.

W. C. Barrett, *Chairman,*
208 Franklin St., Buffalo, N. Y.
S. H. Guilford,
1728 Chestnut St., Philadelphia, Pa.
J. D. Patterson,
Ninth and Walnut Sts., Kansas City, Mo.
T. W. Brophy,
126 State St., Chicago, Ill.
H. W. Morgan,
211 N. High St., Nashville, Tenn.
Foreign Relations Committee.

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

TREATMENT OF ACUTE AND CHRONIC ALVEOLAR ABSCESS.*

BY A. W. HARLAN, M. D., D. D. S., CHICAGO, ILLINOIS.

An acute alveolar abscess is a collection of pus that has not made its exit into the world, the mouth, or opened on the face or neck; as soon as it is opened, or opens spontaneously, it is an abscess with an outlet, later to be called a fistulous outlet. This is true of a chronic abscess when it has no exit through a root canal.

An acute alveolar abscess follows the death of the pulp and its solution in the canal as a result of infection through the root or from the blood-current. The preliminary treatment of an acute abscess is to hasten suppuration by local and constitutional remedies; local, heat and stimulants; constitutional, calcium sulphide one-tenth grain every ten minutes and hydrochlorate of quinine one grain every hour. The only way to treat an acute abscess is to open it and give exit to the pus. As soon as the acute inflammation has subsided the root canal must be cleansed and disinfected and the abscess tract injected with some substance capable of cleansing it at first, and later it should be stimulated or coagulated so that the root-canal may be filled at the same sitting. It needs no argument to convince the most skeptical that if this is done thoroughly the fistula will be obliterated. No prolonged treatment is necessary.

The principal trouble with most cases is failure to drain an acute abscess and failure to disinfect the abscess cavity at the same time. Usually a bichloride solution 1 to 2,000, or a boracic solution, 1 to 24, will do. Even $H^2 O^2$ may be used if one-half grain of bichloride is dissolved in one ounce before injecting it.

Any good disinfectant may be pumped through the root after it is cleansed from all debris, pulp tissue, etc. The rubber dam

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From article in Dental Review.

should be used whenever practicable, as it will facilitate the operation. The remedies used for injecting recent acute abscesses are supposed to be germicides and coagulators. My own preference is for such agents as will effectually cleanse and stimulate the tract or fistule. These are dilute carbolic acid, diluted with alcohol, boroglyceride fifty per cent, zinc sulphate twenty-five per cent, five per cent sulphuric acid dissolved in peppermint water. These are all good stimulants. The results are satisfactory.

A chronic alveolar abscess presupposes an abscess with an outlet through the root or gum, or into some cavity, or even externally on the face or neck. If it opens into the antrum or the nose, and if you wish to save the tooth the fistule must be turned into the mouth by cutting. This is true even if it opens on the face.

In a chronic case we may have caries or necrosis around the apex, or even a calcular deposit on the apex of the root. In the latter event cutting or gouging must be resorted to. When only slight caries or necrosis is present an injection of hydrochloric or sulphuric or trichloracetic acid seven per cent in water will melt the tissues around the apex, if held in place for a few minutes. Time must be allowed before the second treatment. (I prefer not filling the root at the first sitting, as the root canal is a good funnel through which to inject medicines.)

As bones are not dissolved by oils, carbolic acid, zinc preparations, bichloride or any coal tar compound, $H^2 O^2$, boracic acid or hot water, I do not use such agents for the first treatment. It is a safe plan to wait two weeks after injecting an old abscess with acids before trying a second treatment.

It is essential to have the roots free of all old fillings, cotton, wood, wire, pulp tissue, etc., even if it consumes hours in so doing. I have spent several hours in removing bits of attempted root fillings, and stopping holes drilled in the side of roots by those who always enlarge root canals with unerring certainty!

I generally fill the root at the end of the second visit, unless there are unfavorable conditions of health, or local environments. I do not change dressings in old chronic cases daily or weekly. I seal them in firmly at the termination of the first treatment. I do not depend on any drug as a sure cure for abscess. I recognize that in some cases little or no treatment is necessary; in others that the whole fistulous tract must be burnt out or cut out, and a fresh wound made.

I am in favor of packing a large pouch with aristol or beta-naphthol and eucalyptol, where surgical intervention was necessary above or around the apex of a root. There is hardly anything so interesting to me as the handling of an abscess of the chronic variety. (I understand that I am not to touch upon the blind abscess or cold abscess, so I leave it out of consideration.)

A chronic abscess may not yield to treatment at times until a small portion of the appex of the root has been excised. I have records of such cases treated during many years, and only a few of them were failures, usually due to subsequent loosening of the teeth. All chronic abscesses are not amenable to treatment from lack of nutrition to the cementum surrounding the whole root.

No chronic abscess once cured remains so unless the root be well filled at the apex. A root filling should close the apex mechanically, not medicinally.

The results of treatment are satisfactory if the operation is not done hastily. Very few cases are seen by the same operators after twenty or twenty-five years, and many are led to believe that their particular pet operation is the only sure method when done quickly or immediately. My own failures have been due to two causes—faulty treatment and lack of co-operation on the part of the patient. A few failures may result from specific disease and general impoverishment of the whole system, but these are not numerous. Failure usually results from haste, imperfect disinfection and imperfect root filling.

COMMON-SENSE OCCLUSION.*

BY W. W. EVANS, WASHINGTON, D. C.

To obtan a perfect occlusion, there are *three things* to be considered:

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*Extract from International Dental Journal.

First.—A material to make the articulating base-plate with, that will be plastic to work and sufficiently rigid to hold its form when moulded and carved to suit the case, and which will withstand the heat of the mouth without undergoing change.

Second.—The plate or plates should be so shaped and smoothed as to be light, and to conform as nearly as possible to the finished denture, allowing for length of teeth, but without unnecessary bulk.

Third.—When satisfied that the bite is correct, find a means to lock the plates, if in an edentulous mouth, so that when removed the perfect occlusion may be retained without disturbance.

If these rules are strictly adhered to, as hereafter described in detail, there will be no need for mechanical articulators, nor will it be necessary to see the patient again until the work is completed, when it may be placed in the mouth without touching with the file or grindstone.

After carefully testing *all* the materials, to find *which* will meet the above requirements, the writer prefers the use of gutta-percha, as having the greatest number of advantages. The difficulties, however, that have been advanced are, that it requires too high a heat to soften it, is too hot to handle, and that it shrinks too much. This is the trouble when first purchased from the manufacturer, but if one will boil it a few minutes, working a little "gutta-percha and wax" compound with it, hammer it out on the anvil, and boil two or three times more, he will make it plastic, comparatively non-shrinkable, and softening at a lower temperature than modelling compound. It will mould like putty. Work up a half-pound until it becomes as described, and by saving the cuttings and adding a new sheet every two or three weeks, to keep up stock and quality, you will always have a sufficient amount of the proper material on hand.

For an upper denture, soften a cake of gutta-percha in hot water, form it into a ball about the size of a small walnut, and lay upon the center of the model; after having soaked the model to saturation in cold water, work the ball with the thumbs over the surface of the model, first to a thin edge extending back nearly to the soft palate, next forward and to the sides over the alveolar ridge. Taper as high up over the ridge as you expect to carry the plate labially and under the buccinator muscles, finally working all the surplus perpendicular with the ridge and outer margins of plate front and sides. Thin the plate well out from the center. In a word, work this plate to conform in shape as nearly as possible to that expected in the finished plate, and make it thin, especially at the heel. Harden by dipping in cold water, and trim ridge, sides and edge with penknife. This will give you a base-plate that will fit the mouth, feel natural, and one that will enable you to engage your patient in conversation, thus giving you an opportunity to study the facial expression, which is very important in obtaining a correct occlusion. Tell an anecdote, to make the patient smile, as this is the severest test to an artificial denture. These gutta-percha plates should be so trimmed as to virtually represent the finished denture.

Having trimmed off the biting edge of the ridge to a line of uniform contact all around, and having satisfied yourself as to the proper distance of the jaws from each other, contour of plates, etc., mark the median line on the base-plate, chat with the patient, and examine several times to make sure the marked line comes true each time; then cut some V-shaped notches, two on either side, on the cutting edge, soften a small piece of "dainty" wax in summer, and "gutta-percha and wax" in winter, and when quite soft roll to a rope and lay upon the ridge, pressing sufficiently to fix its position. Finally, place in the mouth and have patient bite down through the wax to the base-plate, being careful to observe if the mark of the median line is exactly in the same place as before applying the wax. Gently work the wax to the fronts of the teeth and against the outside of the base-plate while the patient keeps the jaws closed. Should you fail to have the patient close the jaws exactly at the median line, as before the piece of wax was applied, try again until you succeed. You will be well repaid. Never tell your patient to bite naturally; judge that for yourself.

If a full set, make the lower plate in the same way, only work into the soft gutta-percha, while ridging up, a piece of German silver wire of number sixteen wire gauge, to stiffen it. The writer always keeps several pieces of wire, of different sizes and of horseshoe shape, in his box of gutta-percha for both upper and lower cases. This stiffening with wire enables one to trim the base-plate to a nicety, and at the same time prevents the heat of the mouth from softening it out of shape, particularly in summer.

Having procured the occlusion, wet the back extension of the model and coat the surface with a solution of ethereal soap, as this makes the simplest and most effective medium for separating articulating models. Replace the gutta-percha upon the model carefully, wet some soft paper, and pack gently into the hollow orifice between the model portion of the plate and the top lines of the bite, the portion that would be occupied by the tongue if in the mouth. This is to prevent the plaster from running into this space and giving trouble. Next, pour the articulating model.

There are those, probably, who may consider the backward extension or plaster articulator an obsolete method. It is old, I admit, but not obsolete, so long as it continues to serve the purpose as well as, if not better than, more modern, complicated and expensive appliances.

The chief claims are: it is positive in one set position, and there are no screws or bolts to get out of order or be tampered with by an inquisitive friend in a visit to the laboratory.

Your occlusion or bite, as described, if correct, should be so articulated as never to be changed until the work is finished. If it is not correct, no mechanical articulators now constructed will ever make it so perfect as not to require after-grinding or fitting.

METHOD OF MAKING ALL-GOLD DUMMIES*

BY DR. MARK HAYTER, DALLAS, TEX.

We will suppose the construction of the bridge has advanced to the point where we are ready for the dummy.

A plain rubber tooth of the proper size and form for the case in hand is selected and fitted precisely as it is desired the dummy to fit. A piece of fine wire is then twisted about the pins, or through the holes if a pinless tooth is used, the use for which appears presently. A mass of "moldine" is flattened and the surface rubbed over with soapstone; into this the tooth is pressed diagonally, that is, with the buccal cusps in advance until it is entirely embedded. (I suppose molding sand would do as well or better than "moldine" for this purpose.) The tooth is now withdrawn by means of the wire attached, leaving a perfect impression of its buccal and occlusal surfaces. Around this impression a rubber ring is placed and a fusible metal die is cast, and from this a counter-die is made of the same kind of metal, or one of a lower fusing point would be preferable. To prevent the die and counter-die from sticking together the surface of the former should be coated with whiting and the metal for the latter poured as cool as possible and immediately chilled. We now have no further use for the die, the dummy being formed in the counter-die or mold. A gold cap is drawn to a size that will just fit into the mold, and trimmed beveling, one side being left a little longer than the pattern tooth and the opposite side cut almost entirely away. It is then thorouhgly annealed and swaged to the exact form of the mold, bits of lead or small bullets and suitable punches being used for this purpose. A little oil is dropped into the cap before swaging to prevent particles of the lead from adhering; it also prevents the lead from being driven into a solid mass, thereby rendering its removal more easy. The lead is removed, the shell lifted from the mold and the surplus gold trimmed away. The lingual and approximal surfaces are shaped with pliers and the shell filled with gold-scraps and solder if a solid dummy is wanted, or a piece of plate soldered over the opening if it is to be hollow.

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*From the Pacific Dental Gazette.

I have tried to give you a general idea of this method. Of course it can be varied to suit different cases; for instance, if a very short dummy is wanted, such as is used for making open bridges, the mold is made about the depth of the holes in the ordinary die plate, and for shallow molds it is seldom necessary to draw a cap, for the gold plate can usually be struck up without being cracked, and even if it should be it will not mar the finished work if the dummy is properly reinforced or filled. I know of no other system by which dummies can be made to so nearly approximate the forms of natural teeth, and it is seldom necessary to buy extra teeth for this work, as the stock of plain teeth kept on hand by the average dentist for rubber work will usually afford patterns suitable for any case that may arise. With a fair assortment it is seldom necessary to grind a tooth enough to spoil it for future use. In concluding I will say that if you will give this method a fair trial I believe you will find it very satisfactory.

SOME POINTS ON EXTRACTION.*

BY A. K. FINLAYSON, L. D. S.

The extraction of teeth whose removal will permanently benefit the patient, and no other, would seem to be the best practice.

At the outset, it would be better to eliminate all cases where the patients only consults the dentist when driven to do so by pain, and comes simply to have the tooth removed. To suggest treating the tooth, and restoring it to a state of usefulness, giving as your reasons the preservation of the opposing teeth, the articulation, not to speak of the serious loss to the denture and power of mastication, would not be appreciated. The patient's mind is made up that the tooth must come out, and no amount of reasoning will alter the decision.

It is the class of patient who desires that the very best be done for the mouth, that we should consider; taking some of the conditions met with in such mouths where extraction is undoubtedly the treatment; but which tooth, and when to extract, especially in very young mouths, are the debatable points.

I should never think of removing a deciduous tooth, except in very rare cases, until the successor is ready to take its place.

The extraction of a deciduous tooth should be decided upon when its retention would cause great and persistent pain, and a deciduous root when tending to cause irregularity.

Deciduous molars if extracted before the other teeth are ready to come, cause loss of space by the movement forward of the tooth behind to the space made by the loss of the other tooth, but it must be borne in mind, whatever the influence upon the second tooth, that it would be inhuman to allow a child to suffer torture that an adult would not tolerate.

When called upon to decide whether a sixth-year molar should be extracted or not, it very much depends on the condition of the tooth and the age of the patient. Presuming that the tooth is very badly broken down and the patient is much below ten or eleven, I should endeavor to patch up the tooth or teeth until nearer the time of the eruption of the twelfth-year molar, and then extract. To attempt to save the tooth so that it may be useful in the permanent set would be, in my opinion, a mistake, as, at its best, it could not possibly be made a very good tooth, and would probably be taking up room which would be of more importance to the other teeth than the presence of it.

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*Extract from Dental Record.

One generally finds that if one of the sixth-year molars is irreparably gone, the others are much in the same condition. There are exceptions. If the molar above or below the condemned tooth is sound, I would remove it at the same time, as the twelfth-year molar articulation would be interfered with, and so do more harm than good.

If the sixth-year molars on the opposite side of the mouth are good and sound, I should be inclined to leave them.

There is one case which I can recall where great harm was done to the mouth by injudicious extraction. The patient, a boy, came to me suffering greatly from all the sixth-year molars, which were very much broken down and in such a condition that it was impossible to do anything but extract. While he was under chloroform I was persuaded by the doctor to take the temporary molars as well. Their crowns were certainly much broken down, but the roots had only begun to be absorbed.

I saw the patient some considerable time after, and found very marked protrusion of the upper incisors, caused, I am certain, by the bite being thrown entirely on these teeth. Had the temporary molars been left to come away of themselves, or, at least, removed when the bicuspids were first coming in, no such deformity would have occurred.

RESTORATION OF BADLY BROKEN-DOWN MOLARS AND BICUSPIDS.*

BY F. MESSERSCHMITT, D. D. S., ROCHESTER, NEW YORK.

I have used a method for several years with such good results that I take this opportunity to present it for consideration and criticism. I usually treat the tooth several times, so as to get rid of the soft tissue that partly or completely fills the cavity, after which the circumference of the tooth can be obtained by any of the familiar methods. I use the silk ligature for this purpose, because it passes between the teeth more readily than the heavier materials. After getting the size of the tooth, a piece of German silver, the same length as the ligature, is cut from a piece of German silver plate, thirty-five gauge (Brown & Sharpe), or thicker if it can be used, and the ends soldered together with silver or soft solder; the band is slipped over the tooth in the mouth, gently driven down to place with the mallet, removed from time to time, and cut out to fit perfectly around the gum, the same as in making a crown. The band may project slightly at the gum-margin on the buccal side of some teeth, on account of the bulge in the tooth, but the cement will fill up this space. After it fits nicely and passes beyond the broken-down edge of the cavity, the upper portion of the band is cut out, so as not to interfere with the articulation. The edges of the cavity are well cut away; the tooth is cleansed perfectly, napkin applied, and band firmly cemented to the tooth. After the cement becomes thoroughly hard the rubber dam is applied over the band and adjoining teeth, when the cavity can be nicely prepared, canals cleansed perfectly with sulfuric acid (without danger of getting it in the patient's mouth), filled in the usual manner, and the tooth restored to its proper shape with amalgam. The patient is then dismissed until a later day, when the band is cut off and the filling is finished with strips and the polishing wheels. I pass around several models of a case, showing the teeth before and after restoration, without the use of anchor screws or crowns, and doing very good service.

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*Extract from article in Cosmos.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

Opening an Abscess.—In opening an abscess be sure and reach the collection of pus, then wash the cavity or sac with boro-glycerine water. To keep it open use ninety-five per cent carbolic acid.—*Dental Review.*

To Deaden the Mallet Blow.—A rubber hood made of several layers of dam is tied on the plugger. This seemed to him to hasten the recoil, permitting a more rapid use of the mallet and at the same time (deadening the sound so disagreeable to many patients) apparently softening the blow.—*G. H. Claude, in Cosmos.*

A New Die Metal.—I think I have discovered a new metal for making dies for swaging plates. It is called *lumen metal.* It has a tensile strength of 30,000 pounds and compressive strength of 75,000 pounds and melts at about 1,000°. It works very much like Babbitt metal but is very much harder. It makes a nice, clear die and apparently does not shrink or expand.—*B. D. Wikoff, in Review.*

Bridge Repair Without Removal.—A few words in reference to an experience in the repair of an extensive piece of bridge work, from which a porcelain bicuspid had been broken off, I presume, may be of interest. Instead of adopting the bolt and screw method, which necessitates a perforation of the bar or bridge, thereby weakening same considerably, I drilled a vertical groove into the bridge, counter-sinking same, into which I slid a Mason crown, and, by making a model of the part, the procedure was simplified, thus rendering it especially agreeable to the patient, who by this means escaped the ordeal of fitting.—*W. Loewenthal, in Items.*

Influencing Patients.—There is one attitude to our patients which goes farther toward influencing and controlling them than any other one thing, and that is absolute honesty of conviction behind the operator. I have watched the career of different men; I have been something of a student of human nature myself, and from my experience, I am convinced that no matter how successful a man may seem to be, how brilliant he may be as an operator, etc., unless he has behind him the soul of absolute honesty his success will be limited, and it is only a matter of time when the foundation will drop out from under him in some way. Honesty is the governing factor in true success in any field of effort.—*C. N. Johnson, in Review.*

EXTRACTION OF UNERUPTED BICUSPIDS TO PREVENT SUPERIOR PROTRUSION.—Mr. A. Colyer said that in every case in which he had tried the extraction of the unerupted bicuspid for crowded mouths which looked like developing into superior protrusion, no superior protrusion had developed. He had tried the extraction of the lower centrals and the result had been undoubted lowering of the level of the lower incisors. In two distinct cases where he had advised the extraction of the unerupted bicuspids, and his advice had not been taken, the condition of the mouth afterwards necessitated the extraction of the bicuspids and the wearing of the plates, which he thought in the early extraction of bicuspids was almost always avoided.—*Journal of British Dental Association.*

A METHOD OF REPLACING BROKEN FACINGS ON RICHMOND PIVOTS.—This method in construction is very similar to a porcelain facing on any gold crown. The projecting pins from the broken-off facing are ground down even with the backing, and the backing ground down about one-half from the incisive end, and also the sides to a small extent. About one-half of the band on the labial aspect is ground away, allowing the root to be exposed to view. A measurement of the root is taken, and a cylinder constructed to cover the posterior band and backing and the exposed root. The lingual surface is burnished to the backing. A tooth is now selected to fit the vacant space and backed and soldered to the band; the sides of the original backing are now serrated and the crown cemented into position.—*C. W. Kammer, in Cosmos.*

REPLACEMENT OF DISEASED ROOT BY ARTIFICIAL SUBSTITUTE IN CERTAIN CASES OF PYORRHEA.—Dr. Rheine's clinic was the replacement of a diseased root of a molar tooth by an artificial substitute, in those cases of pyorrhea where the gum tissue and alveolus have ceased to perform their function properly and are endeavoring to exfoliate the tooth on account of the diseased and

and irritated root. The doctor showed two cases in the mouths of patients for whom he had performed this operation. It consists of amputating the diseased root, removing it, making a mold of same, then forming an exact counterpart of porcelain with a platinum post extending from the coronal end. The crown is prepared to receive the post. The manufactured root is implanted in the old socket and held in place by suitable filling material. One case shown has been in place five months and evidences excellent health about it; the other of about a month is equally healthy. —*Dental Review.*

Quick Way of Replacing Broken Teeth on Vulcanite Plate.—Dr. A. P. Gore showed a quick way of adjusting a tooth to celluloid or vulcanite, applicable to plates from which one or more teeth or a block are broken. He first cuts with an engine bur a well-defined mortise or groove, with deep undercuts in the plate to receive the pins of the tooth or block to be replaced, and fills the mortise and undercuts with fusible metal. Then, holding the plate wrapped in a napkin in the left hand, with a pair of pliers in the right hand the tooth is held near the flame of an alcohol lamp, while an assistant holds a blunt instrument in the same flame. When the instrument is heated it is placed upon the metal in the groove cut in the plate, which instantly is melted, and while in that condition the warm tooth with heated pins is pressed home. Firm pressure should be continued while the metal is cooling, to prevent shrinkage while cooling. The result is a tooth or block firmly attached to the plate, and is especially suitable for emergency cases.—*Cosmos.*

Method of Repairing Gold Work with Low Heat.—This would only come in place in bridge-work, where you are afraid to put the soldering process through. By combining mercury and gold, and letting it stand long enough to amalgamate well, putting it in the sand-glass and taking a slow heat, it will finally absorb the mercury or evaporate it so that it can be condensed. It is a simple way of mending flaws in the work. I do not know as it adds any great strength to it, but you can connect the broken parts perfectly by a very slow heat. It should be left long enough so that the mercury will take hold of the gold before you attempt to heat it. If I want to do anything of that kind, I simply take a little piece of tin, put it over my heat, cover my teeth, go off and let it alone, with just a slow heat; leave it there a few minutes, and when I come back I know my plate has not been broken, and I go to work and condense and work up that plate perfectly. In finishing gum teeth over gold you can make a very pretty rim with it. One trouble with it would be the expense.—*Dr. Boyd, in Western Dental Journal.*

A Method of Making Partial Lower Dentures.—The importance of strengthening partial lower plates without making them too bulky is patent to all, and expense is a consideration that must be kept in mind; therefore, gold or platinum and iridium cannot enter largely into their construction. As I cannot reconcile myself to cut off sound teeth in order to make bridges, I make many partial dentures according to the following method: Either take two impressions, or else take an impression from the plaster cast. On the second model thus obtained make a wire frame of platinoid fitted closely and accurately, allowing it to extend nearly to the heel of the plate; here turn the wire at right angles and allow it to rest upon the cast. This is done to prevent its being depressed in packing. Now form clasps, preferably of platinum and iridium; place them in juxtaposition with the wire frame, and solder on the model with gold. Remove and place the whole fixture upon the model to which the teeth are to be placed. The wire should be nicked and gold-plated. The whole thing can be made in half an hour, and will be found to be a plate light, strong and durable.—*C. E. Duck, in Cosmos.*

Advantage of Use of Oil of Cajeput with Gutta-Percha for Filling.—I wish to call attention to the usefulness of touching the warmed gutta-percha on its way to the cavity with the oil of cajeput, on account of the increased stickiness of the gutta-percha so treated, such a filling actually cementing itself to the walls of the cavity. It can even be applied wet, and so is of real value in treating a patient ill in bed, etc. The experiment has been performed of sticking a piece of gutta-percha so softened to the inside of a tumbler filled with water, and after cooling it can only be removed with difficulty. It is useful in applying temporary stoppings where there is little or no retention. Also in those cavities which extend clear around a tooth and are so difficult to fill. In this latter case, however, and, indeed, wherever I need more lasting filling along with the cemented quality, I have devised a method which is far superior to the foregoing, in that the gutta-percha is not injured in the least. It is to flood the dried cavity with the oil of cajeput and absorb out the excess, leaving the walls damp; then packing into it the warmed gutta-percha, holding the filling if necessary with an instrument held in the left hand until the packing is completed.—*Dr. Hodgson, in International.*

EASY EXTRACTION OF ROOTS.—Dr. James E. Wyche, of Greensboro, N. C., described a method of extracting difficult roots of teeth without touching the gum, tearing the process to pieces, or breaking the root with the forceps, by using the W. Storer How screw system. For instance, to extract any of the upper straight-rooted teeth, he takes a nerve broach and finds the pulp-canal, which he enlarges by the use of a small round bur about No. 3 or 4, drilling deep enough to get into the solid dentin. He then takes the smallest size tap, AA, fastened in drill chuck and cuts the thread with the hand, not using too much force. If the thread thus formed seems to lack the necessary strength, the tap A can be used, followed by tap B, if still more strength is needed. Then, by use of the screw-post chuck, the screw is inserted, and the tooth can be readily extracted by the use of the ordinary flat-nose pliers. If the root is in the lower jaw, use the right-angle burs to enlarge the canal just as in the upper jaw; take the right-angle tap with the short hub, and proceed as in the upper jaw. The tooth in front may be used as a fulcrum. It is astonishing how easy it is to extract almost any root in the mouth, and with very little pain. It is undoubtedly the best method to extract most difficult roots. The same screw-posts can be used to great advantage to retain gold or amalgam fillings where sufficient undercut cannot be gotten to hold the filling.—*Cosmos.*

SOCIETY.

VERMONT BOARD OF DENTAL EXAMINERS.

A meeting of the Vermont Board of Dental Examiners will be held at the Pavilion Hotel, Montpelier, Wednesday, October 10th, at 2 o'clock p. m., for the examination of candidates to practice dentistry.

The examinations will be in writing and include Anatomy, Physiology, Histology, Bacteriology, Chemistry, Metallurgy, Pathology, Therapeutics, Surgery, Materia Medica, Anæsthesia, Operative and Prosthetic Dentistry, together with an operation in the mouth.

Candidates must come prepared with instruments, rubber dam and gold.

Applications, together with the fee, ten dollars, must be filed with the Secretary on or before October 1st.

Geo. F. Cheney, Secretary,
St. Johnsbury.

THE MISSOURI STATE DENTAL ASSOCIATION.

The following officers have been elected for the coming year:

President, F. F. Fletcher, St. Louis; First Vice-President, W. M. Carter, Sedalia; Second Vice-President, F. H. Achelpohe, St. Charles; Corresponding Secretary, B. L. Thorpe, St. Louis; Recording Secretary, H. H. Sullivan, Kansas City; Treasurer, J. T. Fry, Moberey.

Executive Committee—F. M. Fulkerson, Sedalia; W. M. Carter, Sedalia; J. T. Hull, Butler.

Committee on International Dental Congress During St. Louis' World's Fair, 1903—Wm. Conrad, B. L. Thorpe, H. J. McKellops, F. F. Fletcher, A. H. Fuller, Walter M. Bartlett and W. F. Lawrenz, all of St. Louis.

Next place of meeting, Sedalia, first Tuesday after July 4th, 1901.

THE

OHIO DENTAL JOURNAL.

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CONTRIBUTIONS.

EXTRACTION OF THE THIRD MOLAR INDICATED.

BY THOS. H. CHARMBURY, D.D.S., SEYMOUR, CONN.

Miss M., age 24, came to my office on August 12th, complaining of having had severe pain in region of ramus of jaw, for the past two months or more.

The pain extended through tissues about the ramus, and down into the tissues of the neck and shoulder, and seemed to be constant.

Patient had consulted two or three physicians but could obtain no relief. I examined the mouth carefully and found that the first and second molars contained large silver fillings; at first I thought these might be the seat of trouble, but after applying tests I was obliged to give up that idea.

Made more thorough examination and found that the third molar had recently been erupted. It was not in a normal line with the other teeth, but inclined outward and was situated far back in the angle of the jaw; when the teeth were occluded the pain became more severe. I concluded that there was not room enough for that organ. I extracted it with difficulty. Have seen the patient twice since the operation, and each time she has assured me that she has not experienced the least degree of pain.

INDIVIDUALITY VS. PERSONAL ACQUISITION.*

BY M. C. RAMALEY, D. D. S., CLEVELAND, OHIO.

This subject premises a few primary differences in individuals, which are due both to heredity and environment, for which differences the person is not himself responsible, nor can he modify them to any extent.

Childhood's surroundings are so different, the modes of life so varied, the influences in general so unlike, that all taken together, furnish the material from which the physical, mental and moral foundations of life are built, and which lead to an involuntary tendency varying in accord with the conditions.

In looking for definitions in the different works, I found that they varied, and consequently I shall try to define what is meant by the terms as used in this paper.

By "individuality" is meant that distinctive part of character which is due to heredity and environment, and which is developed without the attention or volition of the person of whom they form a part.

Let us now notice a few things which tend to bring about these characteristic differences, and also remember that these things take place in early life.

First, heredity certainly has a strong influence upon the child. One is born of healthy parents, has a strong and vigorous body, capable of resisting attacks of disease, known naught of sickness or pain, and has never been called upon to suffer, while another, born of parents who are delicate, comes into existence with a diseased body or one prone to disease, and its earlier years are marked by suffering, with no realization of the blessings of health.

Then there are mental differences due to heredity. One is the offspring of a gifted ancestry and inherits a vigorous mental ability with a natural tendency to develop along educational lines, while another, with similar opportunities, may have inherited nothing in that direction.

Second, and perhaps the most potent influence in the developing of individuality is childhood's environment. The child born and brought up in the country, with its invigorating outdoor life and necessary hardships, as they are sometimes called, together with the association with all the forms of animal life and the consequent familiarity with nature, will have developed within him widely different characteristics from the boy born in the city and brought up with no labors to require his attention and little or no familiarity with nature. The very games played and sports engaged in are widely different and they, too, have their influence.

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*Read before the Northern Ohio Dental Society, June, 1900.

Then we must not overlook the home influences. It is often remarked that the son of wealth seldom develops as sturdy a character as the son of poverty or of moderate means. How far this statement may be from the truth does not alter the fact that wealth and poverty each has its influences, also the literary advantages which consist, not alone in books, but in an atmosphere of pure language, for much of individual character is formed before the child can read or comprehend books.

It is thus clearly seen then that "individuality" is an involuntary development, for as the child cannot change its surroundings or modify its physical being, neither can it modify the effect of the influences brought to bear upon its nature, and hence its individuality grows unconsciously, or in other words, its mental and physical being absorb from the surroundings, and weave into the individual those things that make him like or unlike those of his class.

Personal acquisition is that progress toward perfection which the person has made in the calling which he has undertaken, the efficiency attained by efforts made to become more nearly perfect, and is measured largely by the design and force of will-power exerted. It is entirely a voluntary work, limited to neither birth nor rank, but only to those who will make no effort. It is the one thing that is free to all and brings with it the greatest of all blessings, because of the fact that perseverance is most certain to be crowned with success.

There is certainly great value in fine physique, a commanding appearance, and individual bearing, which command the respect of our acquaintances at the very first. This may bring to us at once that which might otherwise require time to obtain, but it can be obtained in time if we are perseverent.

Now for some things which require our attention!

It should be realized, not in mere words but in practical action, that acquisition can never stop. Among the various objects of life that of continually laying up in our minds that store of knowledge from which we can draw for future use should always be kept prominent, with no thought of bringing it to any terminus short of life itself.

This self-improvement need not interfere with the business, social or domestic affairs of life, but will rather be an aid to all of them and will certainly bring success in any special line of work.

The man who is working for his own *general* self-improvement uses every opportunity offered him, while those who are satisfied with their individuality and present attainments lose a great opportunity for growth, because they are stung by criticism instead of being made more intelligent by it. They are shut off from a thousand hints by resting content with present achievements.

But all this improvement requires persistent effort. There is no royal road to anything valuable, no short-cuts or other ways of getting something for nothing and without waiting, and our everyday acquirement in little things is that which decides our moral, educational and spiritual qualities.

We might multiply arguments to prove the value of acquisition, to prove that our successes and failures are what we make them, but we will desist.

Let us, however, consider one *incentive* to self-improvement that is generally overlooked. It is this: "A sense of efficiency; a feeling that we have the ability to perform anything that is likely to come to us."

This must not be considered to mean only a pleasureable sensation in the doing of certain kinds of work which are strictly in our calling. Whatever we do we like to do well and feel gratified when we can do it well, but in certain lines of work there are things we do not like, and consequently we do not give enough attention to that branch of the work to acquire efficiency.

Thus the work to us becomes a "bugbear," not because of the work itself, but because of our own inefficiency, caused by lack of effort. On the other hand, if efficiency is attained some circumstance may open up a career not especially attractive at first sight, but which is found to be suited to the individual capacity and one in which continual application brings excellence.

But as professional men we seldom take into account the delight and real pleasure which should be derived from this excellence.

In the scheme of our daily lives we are too much concerned about the getting of gain or the seeking of praises from our patrons or fellow-practitioners, or engrossed with the doings of society, that we either overlook or do not pause sufficiently long to enjoy the sense of pleasure that should be derived from having performed some technical operation, or made some difficult piece of work successfully, and thus done something for the benefit of a fellow-being.

We thus deprive ourselves of one of the greatest pleasures and most wholesome sources of happiness found in human life.

It seems to the writer that not only a great part of our happiness and usefulness, but also the value of our life to our fellow-beings, will be decided by our attitude to this very important question.

If we make it our aim to derive pleasure from efficiency we will strive hard to acquire that which will bring both pleasure and gain, and regardless of the hereditary and external influences will be able to play an important part in whatever field of labor we choose.

GERMICIDES AND ANTISEPTICS IN DENTISTRY.

BY J. M. CAMPBELL, D. D. S., ST. LOUIS, MO.

From the time when Pasteur announced to the scientific world the discovery of disease germs and the fact that certain substances were fatal to them, the theory of antisepsis, first received with sarcasm and doubt, has been growing in favor until it is now generally accepted as the correct theory of the prevention of disease. Hence we should find every practitioner of the healing art, whether general or special, engaged in a war of extermination against the microbe. Almost all the pathogenic germs which prey upon the human body find their entrance through the mouth, in which they find a favorable environment for their development, while the folds of the internal surfaces of the cheeks and lips, the interstices of the teeth and frequently cavities in the teeth themselves, afford longing places for their gathering and multiplication. How to most effectually destroy these germs, without injury to the delicate portions of the human body, is a question worthy of deep and profound study.

Experiments have demonstrated that many agents are fatal to these germs, as carbolic acid, corrosive sublimate, extreme heat, etc., but a great number of methods and medicaments, while efficacious, are unnecessarily limited in their application on account of their incompatibility with the tissues of the body. For use in the mouth, a germicide or antiseptic should have an agreeable taste and odor rather than the reverse. A caustic disinfectant like carbolic acid, for instance, would here be contra-indicated. Among the many preparations which have been proposed and used for this purpose, none are more elegant than Borolyptol, as it possesses not only great germicidal power, but a delightful fragrance and pleasing taste. In many cases where a patient is found to have a foetid breath, rinsing the mouth with a watery solution of Borolyptol will not only render the breath sweet and wholesome but will impart a sense of freshness and cleanliness to the mouth.

Another condition in which a germicide and antiseptic is of great value and even a necessity, if the case is to be brought to a successful termination, is pyrrhoea alveolaris. In these cases, after the usual surgical treatment, in order to prevent a return to the pathological condition, it is necessary that the patient use not only mechanical means, as tooth brush, powder, etc., to thoroughly remove any fresh deposits of tartar, but also an antiseptic mouth wash. For this purpose the patient should be instructed to use a solution of one part of Borolyptol in about six parts of water, and if, on subsequent examination, it is found that tartar is still being deposited on the teeth, the strength should be increased.

In treating root canals, either where the pulp has perished from the proximity of dental caries, or where it has been found desirable to devitalize it by the aid of medication, it is unnecessary to say that a disinfectant should be used. This is the place of all others where dentists agree as to the advisability of thorough antisepsis, which is generally regarded as the sheet anchor of successful root filling. For this purpose there is probably nothing superior to Borolyptol. I have never had the slightest trouble with any case of root filling in which I have used this preparation. I never was satisfied with the older methods of treating root canals. Peroxide of hydrogen has given me trouble and lost me at least one valuable patient, although highly recommended by many dentists high in the profession. The taste and smell of iodoform are sufficient to banish it forever from every dental office. Black's 1, 2, 3 mixture I have used without the expected results.

As an antiseptic wash for the hands before and after operating and in disinfecting instruments, I consider Borolyptol an ideal preparation. For the former purpose I use it in solution, about one part Borolyptol to ten parts filtered water. For disinfecting instruments I use the Borolyptol in full strength, first carefully cleaning the instruments, and afterwards laying them on antiseptic gauze. It can be used in full strength without any more danger of corroding delicate instruments than would be the case with so much water, in this respect being far superior to other preparations recommended for this purpose, notably corrosive sublimate solution, which easily and quickly corrodes instruments placed therein.

To sum up the practical side of the subject in a few words, I would say to the dental practitioner, in choosing antiseptics and germicides, observe carefully the following points in their respective order: 1st, effectiveness; 2d, range of adaptability; 3d, freedom from poisonous and irritating qualities; 4th, agreeableness. Having considered these points, make your selection with due deliberation, and then *stick to it* until you are convinced you have found something better.

AN ALTERNATING CURRENT DENTAL ENGINE.

In no branch of electrical work have the improvements of recent years been more marked than in the manufacture of electrical appliances for dental use. It is only within this time that reliable firms began the construction of these appliances; previously it was entirely in the hands of the "local electricians" who, without any knowledge of the difficult conditions to be met, and without any regard for the success of an outfit, usually sold any combination of motors and switches he happened to have on hand, however unfit these may have been for the purpose.

The reputable manufacturer when he began the introduction of his products, had indeed, a double situation to meet, on the one hand the severe prejudice of those who had had unfortunate experience with the early makeshifts, and on the other hand the skepticism of those who were opposed to everything electrical for the dental office.

How different is the situation now! One can scarcely enter a dental office and not find electrical appliances of some kind in use and the majority of them giving satisfaction.

Great as the change has been, it has come about solely through the determined efforts of the early manufacturer who, knowing the value of an electric motor in other fields, left nothing undone to prove its great importance to the dentist, if properly constructed.

In the test to which electric motors have since been put in the dental office, they have shown their superiority in so pronounced a way as to leave no doubt that a reliable substitute for the foot engine has certainly been found.

There is, however, one problem with which manufacturers have been unsuccessfully struggling for a great many years, and that is, to produce a simple and reliable electric motor for dental use, which could be attached directly to the alternating current lighting systems, now so frequently found in many of our cities and especially in the country towns.

The 110-volt direct current motor has probably been developed to the highest state of the art; so also, has the storage battery outfit which is very reliable, and is being used extensively by those dentists who have no day supply of electricity.

But the absence until now of a satisfactory dental motor for the alternating current, has been a great obstacle to those dentists whose source of supply is from the alternating systems, and the appearance of a reliable motor is thus correspondingly welcome.

As was to be expected, in the wild rush for development in the larger class of alternating current appliances, the small alternating dental motor was long delayed, which accounts, perhaps,

for the fact that when its advent was finally made its success was instantaneous.

It is with pleasure that we refer to the beautiful little motor recently brought to our attention by the Ritter Dental Mfg. Co., of Rochester, N. Y.

Its remarkable performance is attracting a great deal of very favorable commendation, and a description of the outfit will no doubt be of interest to readers.

The motor, we understand, was subjected to a series of severe tests extending over a period of almost two years before it was finally placed on the market.

Its construction presents considerable ingenuity in design, and the care which has been expended on its many novel details elicits favorable comment.

The accompanying illustration gives a general idea of the appearance of the engine, which, with the complete bracket for suspension and the controller, very much resembles their well-known direct current outfit.

It was during the National Dental Association meeting at Niagara Falls, in August, 1899, that the first motor was placed on exhibition; it was examined and tested by representatives of all the leading dental manufacturing firms and many prominent dentists; since then this particular motor has been in daily use and has always given perfect satisfaction.

The speed regulations are just as good as those of a direct current motor, and the manufacturers state that this can be varied from about 1,000 revolutions per minute, the slowest, to 3,600 revolutions per minute, and the power is practically the same throughout this range.

A single lever on the controller starts the motor, changes the speed, instantly stops it, and reverses the direction of rotation of the bur.

The motor is noiseless in operation and responds readily to the movements of the controller lever.

Simplicity, convenience and the best of all workmanship seem to have been the greatest requisites in the design of these motors and the success attained, especially the degree of accuracy in the workmanship, is certainly remarkable.

An alternating current of electricity is one whose direction of flow alternates, or is rapidly reversed; each reversal is called an alternation. The number of reversals or alternations can be made almost any number desired, depending simply on the design of the dynamos; the different manufacturers of large dynamos have each adapted certain standards, this requires special motors to meet these different conditions.

Those who contemplate purchasing one of these engines must enquire of the electric light company who furnish them the electricity, the voltage of the current, and the number of alternations per minute. It is necessary for the manufacturers to know this before they can supply the motor.

The electrical equipments designed and manufactured, especially for this class of work, by this company, are the result of years of careful and systematic study and experience concerning the conditions to be met, combined with a thorough knowledge of the underlying principles governing the construction of simple, convenient and durable appliances.

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

A NEW METHOD AND FLASK FOR REMAKING VULCANITE DENTURES.*

BY R. STANWAY PARRIS, L. D. S. ENG.

It is the lot of every practitioner to remake vulcanite dentures that are correct as to appearance and articulation, but which have to be remade owing to absorption of the alveolar ridge.

Many years ago I tried to remake these cases by taking them to pieces in the flask; with ordinary flasks failure resulted, so I am trying to make a flask to enable me to take the vulcanite plate out without damaging the plaster materially.

In a recent attempt I hinged the middle ring in three places with one key hinge, after the pattern of a sand-molding flask for

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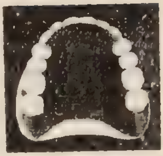
*From Journal of The British Dental Association.



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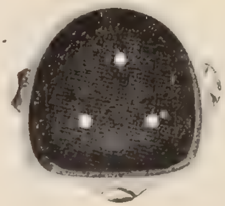

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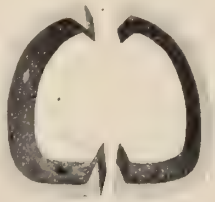

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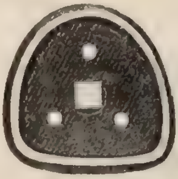

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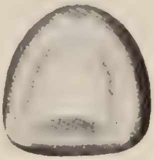

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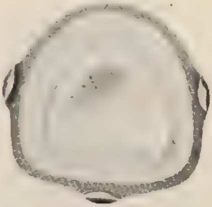

Fig. 3 (a)

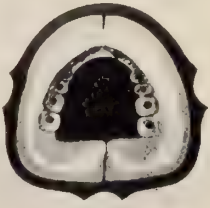

Fig. 3 (c, d).

undercut models; this succeeds if the plaster breaks correctly. In my latest attempt, which I am going to describe, the breaking of the plaster at the correct point is certain.

It is the Dental Manufacturing Company that I have to thank for the trouble they have taken in making me this flask, which is

To remake a case you take a fresh impression, cast the model, take the plate to be remade and put it on the model, running wax right round it with a hot knife; if any pink rubber is underhung or prevents the model going "home," file or break away sufficient and fill up with wax. If a new tooth is required anywhere, or wants shortening or lengthening, wax it on in its new position—no under-cutting of the rubber is required; in the same way a crack in the plate simply has wax run into it. Fig. 2 is a case ready for flasking.

Now sink the plate and model in the largest part of the flask (Fig. 1 *a*) as usual, being careful to trim away enough plaster for both rings, the split and the whole (Fig. 1 *b c d*) to go "home;" grease the plaster. And here I might mention a very old recipe as being one of the best for preventing two plaster surfaces from adhering, namely, olive oil with a small piece of old wax melted together to form a thin paste, the amount of wax required differs in winter and summer.

Put both rings on (the split, if preferred, can be stuck to the whole by warming with a touch of sticky wax) and pour plaster round the outside of the teeth, trimming the centre away as in the old three-part flask, grease again, and finish by casting plaster up to the top of the flask and put on the smaller end (Fig. 1 *e*).

When set, warm slightly, separate bottom (Fig. 3 *e*) and top (Fig. 3 *a*) from the middle portion of flask, wash any wax out, and by a slight tap remove the inner ring holding the vulcanite case and teeth, and put this portion on a sand bath or in a hot oven and warm up thoroughly; then take hold of each side with a cloth, and slightly snap the plaster, which will break cleanly at the join in the ring, the countersunk holes and the shape of the ring holding the plaster firmly. Remove the denture and take to pieces. I generally clean the teeth by putting them in the fire in a spoonful of plaster.

Fit the four parts (*b c d e*) of the flask together, replace the teeth (Fig. 3 *b c d*), pack, etc., as usual, using *b c d e* as if in one piece, and not taking apart again, removing *a* part only.

There is a great saving of time in this process, to taking models, bites, trying in after setting up afresh, etc., which is often of consideration to a patient with only one denture; it would seem that duplicate sets could be made in this flask, provided the model had no undercuts and that the teeth could be exactly matched, of course omitting to warm up the vulcanite plate.

PROCEEDINGS OF THE THIRD INTERNATIONAL DENTAL CONGRESS.

HELD IN PARIS AUGUST 8-14, 1900.

The Third International Dental Congress was held in Paris beginning Aug. 8th, 1900. Representatives of the dental profession from all countries were in attendance.

After the formal opening exercises. essays written for the occasion were read.

A general summary of the work of the Congress, as it appeared in the *British Dental Journal,* will be published for the benefit of our readers who were unable to attend:

"THE RESULTS OF THE RADICAL TREATMENT OF ALVEOLAR ABSCESS OF THE RADICULO-DENTAL CYST IN THE PRESERVATION OF THE TEETH."

BY DR. RODOLF-WEISSER (VIENNA).

Radical treatment of radiculo-dental cyst and of alveolar abscesses may be undertaken with an absolutely certain success in the upper maxilla for incisors, canines, and premolars, and frequently also for the lateral roots of molars.

The accidental opening of the maxillary sinus in operating at the radicular point of the premolars and of the molars, may occur without appreciable reaction on the side of the sinus.

In the case of the lower maxilla, the operation is notably more difficult, by reason of the neighborhood of the mandibulary canal; it is more dangerous, and the reaction is greater.

In spite of this, it should not be abandoned in proper cases when every precaution is taken, even in the case of the lower maxilla.

"CONTRIBUTION TO THE STUDY OF THE MODIFICATION OF THE BONES OF THE FACE DUE TO THE CORRECTION OF DENTAL IRREGULARITIES."

BY M. L. VICHOT (ANGERS).

The author shows that osseous modifications can be obtained both in the mouth and on the face by the judicious employment of an appropriate apparatus, and that without resorting to extra-buccal apparatus, which cannot be borne by all patients.

In the case which forms the subject of the communication the author says that we could never have obtained such a rapid result with an apparatus having its point of support outside the mouth, because it could only be worn during the night; his patient worked all day in an office and could not have brought himself to wear an apparatus of this kind, only fit to be used by a child, and even in that case, it was necessary to reduce to a minimum the discomfort occasioned by the apparatus, that in itself being enough to discourage the patient who thinks only of getting rid of his trouble. It is only this perseverance of the patient which in slow regulations permits us to obtain, in spite of bad physiological conditions, results sometimes more rapid than in analogous cases in children.

The preservation of the teeth in their new position necessitates the constant wearing of a restraining apparatus during a lapse of time proportionate to the age of the subject and the importance of the change produced.

"THE NUTRITION OF DENTIN UNDER PHYSIOLOGICAL INFLUENCES."

BY DR. J. TELLIER (LYON).

After having examined the influence of pathological and physiological states on the dentin, the author says: "As regards general anatomy there is not *one* dentin but *dentins,* simple or complicated in type, and there exist a certain number of intermediary modifications, which, according to the expression of Tomes form a bridge between the dentins of the most simple and complex types. Morgenstern says the first stage of all dentin is a vaso-dentin, and it is by successive degrees we pass from vaso-dentin, the most ancient stage from the point of view of phylogensis, to the later stage constituted by the avascular dentin. This hypothesis is warmly combatted by various anatomists, among others by Wallchoff; if, however, it be verified, the study of nutrition in the vaso-dentin will give us a certain number of precise facts, serving as a point of departure for researches on the nutrition of the hard dentin: in particular we shall be sure of the *role* of the blood vessels of the germ of the dentin, which, according to Morgenstern, take a direct part in the formation of the dentin, though it is generally admitted that they only play an indirect part in bringing to the ivory the calcareous materials which are necessary for it.

In elucidating this question, the comparative study of the different varieties of dentin will lead us very probably to definite notions on the structure of avascular dentin and the neighboring pulps. Although in this order of ideas we be in possession of a number of well-established facts, we must nevertheless admit that there are many obscure questions which we cannot answer with any appearance of certainty, and whose solution is necessary to the study of certain physiological facts.

"Brittle Platinum Pins in Porcelain Teeth."

Mr. William Booth Pearsall read his paper on "Brittle Platinum Pins in Porcelain Teeth." Mr. Pearsall says: "I have chosen this subject as being of deep interest to dentists in active practice, and also with a view of learning from members of my profession scattered throughout the globe if any of them have experienced this most vexatious defect in porcelain teeth. It is high time that we as a profession should take steps to control the production and sale of worthless materials, that we should know what we are using, why certain materials fail and are not to be depended upon. No more mortifying mishap can take place in an honest dentist's practice than to have porcelain pin teeth "drop off" without the least cause, so far as the dentist can discover.

The pin teeth have been chosen, backed, soldered, and the backings polished with due care, and yet without the least warning, one or more have "dropped off" in the patient's mouth. When the teeth that have "dropped off" are examined, a crystalline condition of the fractured surfaces of the platinum pins will be observed close to the surface of the porcelain, and, in some cases, below it. This is invariable, although in some cases portions of the crystalline surface may have become rubbed before the porcelain tooth became detached. I will not go into the history of such disasters, for they have been experienced by dentists in Great Britain and Ireland and the United States for the past forty years.

So far as I can ascertain, no effort had been made to ascertain the cause of this failure in the ductility of the platinum pins in such cases till I began an investigation in 1896, 1897, 1898. I kept all the defective teeth that had "dropped off" in my practice. All my specimens had been soldered with gold solder. I have experienced this defect in pin teeth at different times since 1884. In the spring of 1895, my friend, Mr. G. M. P. Murray, F. R. C. S., sent me some plate teeth for examination and asked my opinion as to the cause of the fracture of the platinum pins of some teeth that had been recently soldered. Examination of the backs of the porcelain teeth showed the same crystalline fracture close to the porcelain, such as I had observed in the cases before mentioned.

When I met Mr. Murray and talked over the matter, I found that his experience was the same as my own. The teeth had "dropped off" as spontaneously and fortuitously, as if Sir Isaac Newton himself was in waiting for an example of the law of gravitation, after the apple tree had done its object lesson. I set to work to collect examples of teeth that had "dropped off," and I soon found that the "accident" was even more frequent amongst teeth used with vulcanite attachments than when the porcelain teeth had been heated and soldered. This defect is met with in teeth manufactured by British and American firms.

I have in my possession a continuous gum canine, the pin of which snapped off when I was pushing it into a wax card in summer weather. The tooth has never been used for any dental purpose, and it is in the state in which it came from the manufacturers to my hands. I brought this defect in platinum pins before my professional brethren in Dublin in 1896, and so interested was the meeting in the matter that I was requested to place the scientific part of the investigation in the hands of Professor W. N. Hartley, F. R. S. of the Royal College of Science, Dublin. Professor A. J. Scott, of the Royal College of Surgeons in Ireland, made micro-photographs of well selected examples of the fractured samples.

I communicated with a large firm trading in the precious metals, with a view of learning the cause of the brittle pins. They wanted a large fee for the investigation, and also an amount of the affected platinum I could not gather in the course of years.

Professor Hartley has devoted many years to spectroscopic work, and has all the necessary apparatus for photographing the spectra of metals when used in minute quantities and volatilised by the electric spark or the oxyhydrogen jet. Professor Hartley's investigation is new to science, and this minute and accurate physical examination should teach platinum refiners the fact that this defect *can be avoided* on their part as well as by teeth manufacturers.

I have had a large correspondence with dentists and manufacturers. The correspondence shows that the defect is of frequent occurrence, that it has been known for over forty years, that remonstrance is of no effect with the manufacturers when brought before them by an individual, that the defect cannot be ascertained by the dentist beforehand, and last, but not least, the manufacturers are absolutely ignorant as to the cause of the brittleness, for they know nothing of science or its teachings.

We may add, in addition to the foregoing, that Mr. Pearsall has been much influenced in bringing forward his plea by the wishes of a great number of English dentists who have asked him again to speak on this subject in hopes that some of the manufacturers may be induced to go thoroughly into the subject.

"NUTRITION OF DENTIN IN RELATION TO PHYSIOLOGICAL INFLUENCES."

BY DR. JULIEN TELLIER (LYONS).

The object set before himself by the author in his essay was to note in a few pages all the elements of the inquiry, to gather together all the documents bearing on the subject scattered about in the various publications, to bind them together in an essay; to settle what is known on the subject; to indicate the parts where research is required; and with the whole of our knowledge as a starting-point to seek to indicate what questions are worth study, in the effort to arrive at precise ideas on the nutrition of the dentin.

The changes which take place in the matter of a cellule are of assimilation and disassimilation, the former being the process by which the cellule acquires the necessary materials for change into its own substance, or for use in the phenomena of its vitality; and the latter consisting of the oxidization of the substance of the cellule itself, or of the matter transformed by it, but not used in the process of reparation. In nutrition we may distinguish between the tissues unprovided with vessels and the vascular tissues. The former are nourished with pure imbibition; the lymphatic and sanguineous plasma of the subjacent tissues penetrate little by little, and step by step their substance, and suffice for the reparation of their elements. In the vascular tissues the nutrition is made directly by the blood such in their very essence are the general ideas which physiology teaches.

The study of the nutrition of the dentin includes the study of the phenomena of assimilation and disassimilation which produce, or which are able to produce, the body of the tissue, and the author thinks it wise to recall briefly the constituents of dentin and the physiological phenomena which characterize that portion of our organism. The normal phenomena of the nutrition of the dentin should be studied, 1, during the development, and 2, after the building up of the tissue. This distinction is wholly artificial, as it appears to be well established that the pulp produces the dentin during the greater part of life. After having considered the question of the nutrition of the dentin from these points of view, and indicating the sources and methods of that nutrition, the author goes on to discuss the physiological influences which may bring about variations, and he warns his hearers that in the theories which follow they must often depend on facts which are at present in a state of hypothesis, and on researches extremely vague, sometimes even he will be obliged to note facts which have to be studied without the possibility of discovering anything in the shape of an elucidation of them.

Having given a review of the subject as indicated, he then turns to the question of the influence of alimentation on the nutrition of the dental tissues, and feels himself on more solid ground, and in the presence of facts of greater precision. It is quite necessary that the tissues, and in particular the dentin, should find in their environment the lime salts which enter into their composition, and these could only be furnished by solid or liquid nourishment. On this point the questions to be solved are particularly numerous, and, in a word, we must find out what is the habitual and what the ideal nutrition, and to arrive at this conclusion we turn to account the facts furnished by experiment and clinical experience.

The experimental method seems not to have been used particularly as an item of research into the nutrition of the dentin, and our plan will be to vary the qualities of the alimentation and note the results. For this there are two methods: (*a*) the suppression —or rather the diminution—of the calcium salts contained in the nutrition, and (*b*) the addition of these salts.

The prolonged deprivation of the earthy salts, first diminishes the lime salts in the bone (Forster, Stilling and Mehring, Lehman); second, has no influence on the composition of the bone (Zaleski, Weiske and Wildt). It appears then proved that the alimentary chalk is necessary in the building up of the skeleton, but the conditions of alimentation are not well known. The addition of salts gives only incomplete and contradictory results, and an acid alimentation exercises an action over the ossification.

The clinical method, by numerous practical examinations in the public schools, authorizes Rose (of Fribourg) to assert with sufficient certainty, that the use of water and aliments poor in chalk has an unfavorable influence on the structure of the teeth. Rose's conclusions, however, are not entirely above criticism, for we read in the first pages of his book that he has chosen the color of the teeth as a criterion of their quality. The author continues by a comparison of the various authorities on the subject, and quotes in turn the opinions of Black, Williams, Stowell, Kirk, Brown, Graham, etc., and decides that the clinics for the most part admit as proved the utility of the treatment by medicaments in those affections where there has been a demineralization of the tissues containing calcium salts; but the question demands new researches as far as the dental system is concerned and to these he turns, and with their consideration he concludes his paper.

"AN ESSAY ON SIALO-SEMEIOLOGY."

BY M. MICHAELS (PARIS).

This paper is an exceedingly careful and inclusive treatise on the application of the analysis of the saliva to the diagnosis of diathesic affections and gingivo-dental changes, and is of too great length to allow us to give at present more than a mere sketch of the plan adopted by the author. He begins by an introduction, in which he asks for the indulgence of his hearers owing to the difficult nature of the work which he has undertaken. The study of certain obscure problems in dental science led him to examine into the histological chemistry of the organism and modification of the diathesic condition. Physiology teaches the complexity of the normal biochemical phenomena which constitute the condition of health, as well as those which constitute that of disease. The chemistry of the saliva is still full of uncertainty and obscure, and his end has been attempted by the study of the saliva in both conditions. What he proposes therefore to do is to enquire into the secretions in general, to make a more special study of the salivary secretion—of its essential, physical, and chemical properties, and of the changes that are connected with it. This study is expected to show what is the relation of the saliva to pathological and diathesic conditions.

Saliva, like all recrementitial secretions, is liable to physiological oscillations in constant relation to the changes in the humors of the body. The emission of saliva is followed by a new absorption, and this results in the formation of a sort of circuit very interesting to notice and of which account must be made; for the passage of the saliva in the blood effects under normal conditions a soda combination at the same time that it is eliminated in a variable condition, at times acid and at others alkaline or neuter. On the other hand, every crystallizable chemical principle, every salt acid, alkaline or neuter, even the alkaloids, the pigments biliary or free acid, circulate in the sanguineous plasma—all these principles in certain variable docimastic proportions are found in the saliva of certain conditions of diathesis. In making the various observations on the different properties, physical, chemical, or organoleptic, of the saliva as they exist in the diathesic periods, how should we explain the special kinds of appearance, consistency, coloration, sapidity, smell, diverse crystallizations, the presence of ureïdes, alkaloids, pigments, if not by the fact that the principles were pre-existent in the plasma and were dialysable by glandular action?

The organoleptic properties of the normal saliva are not characteristic except in comparison with diathesic saliva; but in studying the differentiation we quickly learn to recognize and distinguish one from the other. By reason of the multiplied characters which the saliva presents in the different states of health, the following problems are presented for our consideration—What are the principles which differentiate physiological from pathological saliva? Is there any correlation between salivary chemistry and the diathesic conditions? Does the cacochemic state produce a morbid saliva capable of influencing the gingivo-dental tissues? Does the saliva follow the biochemical oscillations? Is its composition simple or complex? Is it possible to establish a classification of the organoleptic characters of the saliva and refer them to particular states of health? Is it possible to fix the causes of the variation of the secretion? The essayist endeavors to prove that the pathological modifications of the saliva are in relation with diathesic conditions. He cannot pretend that it will be complete, in spite of the fact that he has studied the saliva of more than two hundred persons presenting different morbid types. The observations which he has made, however, convinces him of the extreme importance of the question.

M. Michaël's essay was divided into various parts under the different headings. After the preface comes the history. In this section he traces the course of the study of the subject, although he does not claim that his bibliography is quite complete. In 1835 Dr. A. Donné published in the *Archives Generales de Medecine* a study on the chemical characteristics of the saliva considered as a means of diagnosing certain stomachic affections. Two theses on the same subject appeared in 1838 by Steivenart of Paris, and in 1839 by Dr. Thollon, Montpellier. Dr. Perin wrote on the same subject in 1840, followed in 1856 by Dr. Louget, and in 1881 by A. Boucherone. Dr. Binet's essay in 1884 is one of the most important bearing on the subject, and the author gives a summary abstract of its leading points. In discussing the history the author introduces the conclusions of various writers dealing with urea, albuminaria, biliary pigments, sugar, metals and metalloids, phosphorous organic compounds, etc., and their influence on salivary conditions. He then goes on to generalities and microscopic and polariscopic techniques; the study of normal saliva in health; the analysis of saliva—its physical, chemical, and organoleptic properties; hepatic chemistry, salivary chemistry, physiological and pathological, comparative observations of the saliva and the urine, and ends with a chapter on the conclusions to be derived from a study of salivary chemistry. The latter are as follows: The analysis of the saliva has a certain value in the diagnosis of chronic affections. Every chemical principle—salts, acids, alkaloids—dissolved in pathological saliva is present in histological preparations after precipitation and crystallisation by spontaneous evaporation or active drying of the liquid—under the form of crystalline figures or spectral shadows, determinable first, by their form, second, by colouration under the micro-polariscope. The salts so formed are constantly identical in the same diathesic conditions, but the coloration varies in intensity according to the periods of their conditions.

The diagnosis of diathesic affection can, therefore, be formed by the following elements which the analysis of the saliva provides. (1) By the observation of the differential characteristics—the properties, chemical, physical, and organoleptic. (2) Analytical procedure (reactive, microscopic, or micro-polariscopic) permit the elimination of the organic alkaloids, the acid salts, urobiline, biliary elements and pigments, alkaline, sulphocyanides, whose presence in the blood and in the saliva is pathognomic, and an indication of the vitiation of the organic secretions. (3) The presence of acid salts in the saliva, visible by polarization, indicates a hyperacid diathesis. (4) The presence of crystalline salts, invisible by polarization, but visible under the microscope, is characteristic of alkaline chlorides which indicate a hypo-acid diathesis. (5) The saliva of adolescents contains a dextrinic principle (glycogen) susceptible of fermentation under the influence of ptyaline in the presence of earthy salts. In this way is obtained the dissolution of the earthy salt by the substitution of lactic acid for carbonic acid. (6) The saliva contains the definite chemical principles which arrest or retard the progress of dental caries (sulphocyanide of ammonium). (7) The alkaline sulphocyanides arrest the formation of putrid fermentation. (8) Chemically, dental caries is a disease of demineralization by the presence of an excess of acid principles in the saliva having a greater affinity for the chemical combinations of the teeth. (9) The chemical affinity of potash and soda is greater in earthy alkaline bases in combination with acid salts. (10) Lactic acid possesses an affinity for chalk greater than for carbonic acid; it takes the place of the latter. (11) Alterations (active dental caries) characterise the hypo-acid diathesis. (12) The dental caries diathesis (gout, diabetes) result from lactic fermentations.

"Popularization of the Principles of Dental Hygiene."

BY CH. CHARPENTIER, D.E.D.P., D.F.M.P.

To innovate a new system is easy in general, but when these innovations are attempted in the country, the work is much more difficult, inasmuch as we have to do with custom and prejudices which oppose us like impregnable barriers which only time and perseverance will enable us to surmount. Take for example the teaching of agriculture; twenty years ago such schools hardly existed, how many professors of departmental agriculture, of institutions specially devoted to the task of initiating children into farm work, were to be found? Here or there might be found a professor; but in spite of all his efforts, and his learning, it was impossible for him to do anything like the work expected from him. Gradually, however, agricultural stations were formed, and little by little we have arrived at our present condition, where we have in each owner of land a profound knowledge of the soil and its capabilities, and on all sides a better method of cultivation. It must not be supposed that this was brought about merely by an official proclamation; it was, on the contrary, a work of steady perseverance in the face of all difficulties; and it is only by such means that we shall be able to popularize the study and the knowledge of dental hygiene.

Let us see what has already been done in the matter. As distinct from animal hygiene, which has made great progress in latter years, human hygiene is in a state of embryo. It is immensely more difficult to insist on hygiene in the case of men than in that of animals, for man takes a greater interest in the welfare of the latter, representing as they do his rent, his living, and his capital, and he thinks they should take the first place in his thoughts.

After Pasteur had proved that the epizoötic diseases were almost all contagious, and that to eradicate the evil from the cattle it was necessary to slaughter them, and render aseptic all the precincts of the farms and stables, a service of sanitation was created. One or more veterinary surgeons in each district or special inspectors were appointed to see that the rules and laws of hygiene were carried out, and all precautions were taken to eradicate the disease, and prevent any chance of its recrudescence.

As said above, it is easier to make the farmer keep his fields and cattle in cleanliness and order, than to keep himself in hygienic condition, and that is why it may be stated that hygiene as applied to man is a long way behind the times, and may be said hardly to exist. In order to create a reform in this particular direction, the author proposes two points for consideration—(1) conference where the subject may be considered from points general and particular, and (2) dental inspection in the schools.

Several gentlemen, M. Vidal for example, have taken the initiative in convoking conferences in their districts to consider the diseases of teeth, and those resulting from an unhealthy condition of the mouth, and the author hopes that there will gradually be perfected in the country districts a reasonable and logical system of dental hygiene, which will become natural to all, and by publishing abstracts of the lessons of the professors on dental hygiene, the inspection of the mouths of children in the country schools or in the cantons will be the sole means by which to arrive at the object in view.

(To be continued.)

STABLE SOLUTIONS FOR COCAINE.

Aqueous solutions of cocain hydrochlorat, which ordinarily deteriorate rapidly, may be preserved unimpaired by the addition of twenty-five per cent. of euthymol. For most purposes the pure euthymol may be used instead of distilled water, since solutions thus prepared will keep indefinitely. For ocular instillation a stronger solution of cocain in euthymol may be diluted with water just before use. The following formulæ are suggested as thoroughly practicable in office work:

FOUR PER CENT. SOLUTION.

Cocain Hydrochlorat, 18⅕ grains.
Distilled water, 6 fluidrachms.
Euthymol, 2 fluidrachms.

TEN PER CENT. STOCK SOLUTION.

Cocain Hydrochlorat, 45½ grains.
Euthymol, one fluidounce.

This solution will keep indefinitely and may be reduced to any desired strength by the simple addition of distilled water.—*Therapeutic Notes.*

A SAFETY GOLD CROWN.*

BY H. G. MAIZE, D. D. S., GERMANTOWN, PA.

About two years ago I had a case of a lower left second molar, first and third molars being out, leaving the second the mainstay in mastication. The tooth was very large, and had large, straight canals, which were filled nicely with gutta-percha, the rest of tooth being filled with cement, but most of it had broken away with the anterior lingual and distal walls, leaving nothing to build on except the buccal wall.

I saw the only way to save remaining part of tooth was to crown it, but it had to be done in such a way that, if the tooth gave trouble, it could be opened without removing the crown.

After treating tooth for some time, the canals were filled with a combination of aristol, beechwood creosote and paraffine, filling the pulp chamber with gutta-percha, and building a column of it to the surface of the tooth, then building up and around gutta-percha with cement. Made a band and swaged a cusp in the usual way, but before flowing cusp, pushed a hole in it right over the column of gutta-percha, using an instrument shaped like a pencil point, making an opening with flanges on the under side of cusp; then flowed and soldered to band. A disk to fit opening in cusp was then made.

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*From Items of Interest.

Taking a piece of 36-24 K. gold, it was burnished perfectly to edges of opening, removed, carefully placed on a piece of charcoal and flowed full of 22 K. gold, making a solid disk perfectly filling the parts. A cone was then made of a piece of platinum wire of suitable thickness, soldered to under side of disk, making an inverted cone connection to disk. The crown was cemented to place, all cement removed from opening, leaving gutta-percha column directly underenath. After drying parts thoroughly, the disk was heated to almost redness and pressed to place, making a complete crown with a removable disk directly over the pulp chamber.

When the disk is to be removed, take a suitable sized burnisher, heat thoroughly, place it over disk, which is a good conductor and soon softens the gutta-percha underneath, after which it is an easy matter to remove disk; take out the gutta-percha and we have free access to the canals.

AMALGAM ALLOYS AND THEIR USES.*

BY GEORGE E. HUNT, M. D., D. D. S., INDIANAPOLIS, IND.

In my opinion, every alloy filling would be a better filling by being malleted to place. If it is not malleted, every piece of amalgam should be condensed with a pressure of from seven to ten pounds. The next time you go to the butcher's to buy a steak take your lead pencil and, holding it as you would a plugger, make pressure on the spring balance scale on which your meat is weighed, and see what ten pounds of pressure means. If you are not condensing your amalgam fillings with that amount of pressure you are not making them as near perfect as you can.

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*Extract from article in Dominion Dental Journal.

And, if you will put a small pledget of bibulous paper over each piece of amalgam as you place it in the cavity, and mallet the mass thoroughly, you will be making a still better filling. The bibulous paper serves the two-fold purpose of preventing any chopping up of the amalgam and of taking up any free mercury that the malleting may bring to the surface. When a piece of the mix is placed in the cavity it should be carried straight before the plugger point until thoroughly condensed. For this work, broad, flat, shallowly-serrated points are best adapted. The round ball burnishers so frequently used in working amalgams are not well fitted for the purpose.

If a medium-setting alloy is used, all excess mercury should be wrung out and the amalgam used as dry as it is possible to get it. This is best accomplished by using a piece of drilling or fine meshed linen. The mix is placed in the middle of the piece and the ends tightly twisted. It is good finger exercise if you get the mass as dry as you should. With the quick-setting alloys, such a procedure is impracticable. The time spent in wringing out the alloy and the greater rapidity of crystallization imparted to it by the small amount of mercury left in it, are almost certain to cause it to partially set before it is used.

If the following rules for making an amalgam filling are carried out the result will more often correspond with the desires of the operator:

First. Prepare the cavity just as you would for a gold filling, except that bevelling the margins is advisable. The same care devoted to the preparation of the cavity that is given to one designed to receive gold will alone vastly increase the percentage of successful fillings.

Second. Never put an amalgam filling in an occluso-proximal cavity without a matrix. The best amalgam filling can only be inserted when the cavity has four walls against which to pack the material. If one of the tooth walls is broken down, its place must be taken by a matrix if the desired results are to be obtained.

Third. Use enough mercury to make a homogenous mass that does not readily crumble under the finger. If the alloy is a medium-setting one, wring the mix out strongly, leaving it as dry as possible. If a quick-setting one, leave enough mercury in the mix to enable you to fill the cavity before perceptible crystallization occurs. This amount can only be determined by experience.

Fourth. Place small pieces at a time in the cavity, condensing each piece before adding another. Good amalgam fillings cannot be made by "wiping" the alloy into the cavity in one large mass Condense with broad, flat-faced, shallowly-serrated pluggers by placing the point either directly on the alloy or on bibulous paper covering the alloy, and carrying that portion of the mix directly before the plugger point until it is condensed. The plugger is then placed on another part of the mass and the performance repeated. Chopping up the aloy by repeated jabs at it, as in condensing gold, is harmful. Heavy pressure with hand instruments, or, preferably, malleting, will give the best results.

Fifth. Finish every filling with the same care that is bestowed on gold fillings. No matter how well the cavity is prepared or how well the filling is inserted, a bad finish at the cervical margin will cause it to fail in a short time.

Sixth. Charge more for your amalgam fillings. Your patient will appreciate them more highly and you will make them better. "The better the pay, the better the deed."

REMOVABLE CONTINUOUS GUM SADDLE BRIDGE (ALLEN'S HIGH FUSING), RESTING ON A PIVOT.

BY HOFZAHNARZT DR. EUG. WEUNSCHE, DRESDEN, GERMANY.

A removable bridge, to replace the premolars and molars, is to be fitted to the lower jaw. As a support, I have only the root of the first premolar. After this root has been prepared and beveled down to the gum, I proceed to make, just as for Richmond crowns, a platinum ring one and one-half mm. wide (0.15 mm. fine), fit the same upon the root and take an impression with a suitable peg fitting exactly into the root canal. If the ring fits well, it will remain in the mouth, and is then put in its place in the impression.

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*From article in Items of Interest.

After the model thus obtained, the cap is soldered with ring and peg. The latter is then beveled down. Upon the cap I then solder a silver cube one mm. below the biting surface. I now make a platinum ring fitting over the cap and overtopping the silver cube. The interstices between ring and cube are then filled with closely fitting platinum pieces which are soldered to the outer ring. On the side corresponding to the front the ring is then cut, and the two ends thus made are joined by means of a piece of straight, thin platinum plate. The ring is then crowned with a cap, and enamel fused into the front in form of a tooth. Both parts are now put together again and a hole drilled downward through crown and cube. A properly fitting peg with a head at one end, holds both parts closely together. I then make a platinum saddle for the next three teeth, articulate them, placed on wax, exactly, and with gold solder the teeth to the saddle. After this the enamel is fused on in the usual manner.

The body requires to be laid on in a double coat and baked twice, after which the enamel is painted on and fused. The double crown is now fastened to the plate with hard wax and fitted in the mouth. The root cap is next cemented in, the covering cap with the enamel front soldered to the saddle, and the bridge placed in position by putting the crown over the root cap and fastening the two parts with the peg. The peg slants downward and is split to give it the effect of a spring temper. The enamel bridge looks very well in the mouth, and if fastened in this way sits very firm, serving for masticating purposes in the manner desired.

MERCUROL AS A DENTAL ANTISEPTIC.*

BY A. J. WALSH, D. D. S., NEW YORK CITY.

For the benefit of any of my brethren in the profession who may be seeking for more light on the subject of dental antisepsis, I will relate briefly two cases, histories taken at random from my note book.

Case I: Chronic alevolar abscess of the upper right cuspid, in a woman about forty years old. This patient had been under treatment for three weeks and despite my best efforts with such agents as mercuric chloride solution, hydrogen dioxide and pyrozone, but little progress had been made toward a cure. At this juncture I began using a solution of mercurol, one drachm of which was dissolved in three and one-half ounces of warm water. This solution was injected directly into the abscess cavity, through the pulp canal. Decided improvement followed the first injection and a second treatment effected a complete cure of the abscess, so that I was able to fill the pulp canal and the tooth a week after the first treatment with mercurol.

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*Extract from Items of Interest.

Case II: A young woman came to me with necrosis of the inferior maxilla, caused by an injury, the result of a fall. After removing the lower right cuspid and lateral incisor, pus continued to exude from the alveoli. Upon careful examination I found quite a large piece of necrosed bone to be the source of the difficulty. After several treatments with solutions of bichloride of mercury (1-5000) and peroxide of hydrogen, I decided to try mercurol. Thereupon I prepared a solution containing one drachm to three and one-half ounces of hot water, which was carefully injected into the sinus so as to reach every point of the necrosed surface. Two applications retarded the formation of pus to such an extent that I was enabled to make a thorough examination and determine the exact extent of the diseased area. I then decided that it would be necessary to remove the loose bone instead of waiting for exfoliation to occur. The operation was quickly performed and resulted in the separation of a sequestrum one and one-half inches long by three-quarters inch in width. The wound was thoroughly washed with the mercurol solution and the patient dismissed for the day. Three days later a decided change for the better had taken place, and there was evidence of a tendency on the part of the wound to heal. A few days later the patient was discharged cured.

I believe that mercurol is the most powerful antiseptic which has come to my hands. It has no cauterant action or even irritating effect, so often noticed with other antiseptics. I can confidently recommend its use to the dental surgeon, as from practical experience I know its worth.

THE DENTIST AND PER CENT.*

BY C. B. SQUIRES, SOMERVILLE, MASS.

Now if we all used the metric (the only proper and scientific system) it would be simply a case of multiplication in making any per cent of an aqueous solution of a solid, because the unit of dry and liquid measure corresponds—*i. e.*, one cubic centimeter of pure water at its greatest density weighs one gram. For example, to make 30 cc. of a five per cent solution of cocain hydrochlorate we proceed thus: 30 × .05 = 1.50, one and fifty hundredths, or one and one-half grams, being the amount of cocain hydrachlorate to use.

But when we use the apothecaries' weight and measure we find that the unit of weight (the grain) and the unit of measure (the minim) do not correspond—*i. e.*, one minim of water at its greatest density does not weigh just one grain, but a little less. One fluid ounce of water contains 480 minims, but this will not weigh one troy ounce, or 480 grains, but 455.6 grains. Then it necessarily follows that if we weigh one substance and measure the other, we must convert the measured substance into weight before figuring the percentage. For example, to make a fluid ounce of three per cent cocain hydrochlorate we would take the equivalent of a fluid ounce in grains, which is 455.6, and multiply by three, thus: 455.6 × .03 = 13,668, the amount of cocain hydrochlorate to use—practically thirteen and one-half grains. If you wish to make only one dram of the solution, get one-eighth of 455.6 or 56.95, practically fifty-seven grains; multiply this by three, thus: 57 × .03 = 1.71, practically one and three-quarter grains. To get a three and one-half per cent proceed the same, 57 × .35 = 1.995, practically two grains.

It is customary in making ordinary acqueous solutions to measure the liquids and weigh the solids, but we could weigh both and then there would be no converting—*e. g.*, to make one troy ounce of three per cent solution proceed thus: 480 × .03 = 14.40. Take 14.40 grains and add water to one troy ounce (480 grains), and we have a three per cent solution, as in the previous example, but the finished product is not the same. In this case we have made a little more than a fluid ounce.

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*Extract from article in Dental Cosmos.

If we were using a two per cent solution of cocain hydrochlorate for injection in tooth-extraction and our syringe held one-half dram (30 minims), to find the amount of cocain hydrochlorate in each syringeful we would take the equivalent of thirty minims in grains, or 28.5, and multiply by 0.2, thus: 28.5 × .02 = .570, five hundred and seventy thousandths or fifty-seven hundredths, practically one-half grain.

Dentists should be able to reduce from a higher to a lower per cent, especially now that formaldehyd is being used quite extensively. Formaldehyd is found commercially in a thirty-five to forty per cent aqueous solution. This is too strong for ordinary use. If our solution is forty per cent strength it is a simple matter to reduce it one-half with water and get a twenty per cent solution; double this quantity again with water and get a ten per cent solution and so on. But if your solution is thirty-five per cent and you wish to reduce it to a three and one-half per cent, for example, the process of the above method would not be so easy. There are several rules for reducing from a higher to a lower per cent, but the following is probably as simple as any. It is stated in proportion, according to the rule of three, thus: The per cent of the stronger is to the per cent of the weaker as the quantity of weaker desired is to quantity of stronger required to produce it.

Now to make a fluid ounce of three and one-half per cent formaldehyd from a thirty-five per cent we would state it thus: 35 : 3.5 : 480 : X. To find X, or the unknown quantity, we multiply the second and third terms and divide the product by the first term, thus: 480 × 3.5 = 1680.0, and 1680.0 ÷ 3.5 = 48. Forty-eight minims, the amount of the thirty-five per cent solution to use in an ounce of water to make a three and one-half per cent solution. We convert the ounce into minims in the proportion, so as to get the product or unknown quantity in minims, instead of in a fraction of an ounce. Another: to make sixteen fluid ounces of a seven per cent solution from a thirty-five per cent—35 : 7 : : 16 : X —16 × 7 = 112, and 112 ÷ 35 = 3.2, three and two-tenths ounces, the amount of the strong to use.

Every dentist should have a knowledge of at least these two forms of percentage, and be able to figure them out and make the solutions without his apothecary.

A METHOD OF STRENGTHENING RUBBER PLATES.*

BY H. ZIELE, DUNEDIN, NEW ZEALAND.

When the gum is too full and does not allow of gum teeth being used for the anterior teeth they are naturally set on the plaster and as the bite is generally very close in these cases there is very little rubber to support the teeth. The case is turned out in the usual way, but in a few days the patient returns with the plate minus one or more teeth; which are generally intact but have been drawn away from the rubber. The following will strengthen this weak plate and prevent the irksome trouble of repairing. After the waxed case has been satisfactorily tried in, remove it from the model; and as there is generally a small piece of gum-work extending from the first or second bicuspid to the back of the plate, it is necessary to remove this by cutting it flush with the necks of the teeth. Now invest the case in fire clay and plaster with the cutting edges of the teeth upwards, which you slightly cover over with the investment. It is just as well to strengthen the investment with a ring of copper wire to prevent it cracking and so dislodging the teeth in the subsequent firing; this wire is gently pressed into the investment before it hardens. When dry remove all wax thoroughly with the boiling water and trim down the investing material so as to expose all the pins to view, but being careful to keep the teeth covered as much as possible. Now anneal a small piece of platinum or dental alloy wire (about 4½ inches) and bend it so as to come in contact with one or preferably both pins of each tooth, attach this wire to the pins of all the teeth and solder. Should there be a tooth which is rather difficult to make the wire touch, lay a small piece of platinum plate across so as to make the solder run across to the pins. Another method is to get fine platinum wire and starting at the second molar wind it round the pins, twist it over to the first molar and wind it round its pins and so on till the whole series is bound together. After this is satisfactorily done, apply your flux to the pins and wire and lay several pieces of solder to each tooth; heat in the usual way preparatory to soldering and solder. After cooling very carefully the investment is removed from the teeth and we now have them soldered in a band, and when this is applied to the model it should fit as accurately as before. Now wax up as before flask, pack, and vulcanize in the usual way, packing white rubber between the central teeth. When finished off it will have the appearance of an ordinary case; but will be infinitely stronger and you will never have to repair the case unless the teeth have been fractured by a blow or a severe knock.

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*Extract from article in Items of Interest.

AN ACCURATE METHOD OF ADAPTATION IN CROWN WORK.*

J. M. HALE, D. D. S., MT. VERNON, IND.

I believe all will agree that it is not possible in even an average number of cases to produce that satisfactory adaptation so much to be desired in such cases; hence the deduction that individual dies presents the only true means of securing accurate results.

I will presume the band or collar has already been properly fitted to the root, cut to the proper length, allowing room for the cusps and contoured so as to fill the space between the two contiguous teeth, restoring the points of contact.

With the collar in position on the root; a small amount of modeling compound is prepared as soft as possible, and inserted in the mouth so as to include two or three of the adjoining teeth. The patient is then directed to close the teeth tightly and press against the compound from inside, above and below, in front and in back, with tongue, thus bringing out a sharp outline of all parts around the collar and adjoining teeth. The operator can also perform same movements with his finger on outside. Chill the compound and remove carefully. The collar may or may not come out with this bite, but if instructions have been carefully followed, the collar can be taken from the tooth and fitted in the bite in a true position.

It might be well to carefully note the patient's bite before the compound is inserted so that the operator can inspect the opposite side of the patient's mouth during closure and ascertain whether a true bite has been given or not. After the bite has been taken out of the mouth and thoroughly chilled, and the collar thoroughly fitted in its proper place it is then ready for the articulator. Before mounting, flow a thin film of wax around the inner surface of the band.

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*Extract from Indiana Dental Journal.

Mount preferably on a Bonwill articulator, or else on the crown articulator.

If instructions have been followed, you will find the collar and the teeth in the same position as in the mouth.

Warming the collar over the spirit lamp will melt the film of wax and allow an easy removal. More contouring can be done at this juncture, if necessary, before the collar is removed from model, as the cervix is held in shape by the plaster, and collar suffers no change of shape in that part.

The occluding surfaces are shellacked, the collar filled with soft plaster, and occlusion made.

When the plaster has well hardened, the articulator is opened and the plaster trimmed down even with the outer edge of collar, the remaining portion forms the cusp which presents in perfection of detail the outlines of the antagonizing teeth. The plaster cusp is to be trimmed to expose the square shoulder of the top of the collar, and the whole surface scraped down uniformly about the thickness of 30 gauge gold, otherwise when the cusp is swaged it would be too large by the thickness of gold used in making the cusp. Cusp and sulci are then carved in such a manner as to get the greatest amount of masticating surfaces and natural effect.

Artistic effect can now be obtained by cutting in typical grooves and pits without in any way marring or interfering with those places which mark the desired points of occlusion.

After the cusps have been properly formed, remove the collar and cusp and imbed in plaster to a level with the shoulder, which, when set, can be cut to a tapering prism shape, or rounded, larger at base than top. Varnish model and cusp, and wait a little to dry. With the model thus obtained, make a die and counter-die in Mellott's metal.

After swaging cusps the collar, without its plaster, should be replaced on model and edges of cusp, or collar, or both trimmed until they evenly and approximate and permit closure of articulator, then wired and soldered and finished as usual.

When a solid or cast cusp is desired, the same procedure is applied, except that in outlining the plaster cusp it is allowed to remain flush with outside edge of the collar, imprint in moldine is secured, the same is placed over flame and allowed to dry out thoroughly, after which gold may be fused into it with a blowpipe and cast by using a piece of smooth carbon large enough in diameter to press it into place.

While this method may seem to some to be too elaborate in detail for the ordinary work, a trial will surely convince anyone to the contrary, and its merits will meet the approval of all who are anxiously trying to accomplish the most in the best manner. It is presented with no claim to originality, but with the earnest hope and belief that a practice of same will meet the hearty approval of all who desire to accomplish the most wholesome results in utter disregard of previous customs and practices.

DEFECTS OF COLLARLESS CROWNS.*

BY WILLIAM HERN, ENG.

My experience of collarless crowns shows them to be subject to the following defects:

(1) A serious liability to caries occurring on the root surface, especially on the lingual and interstitial aspects through the lodgment of food particles, in and about the line of junction of the crown with the root.

(2) A forward bending of the tooth, or breakage of the post at its junction with the crown.

(3) A splitting of the root through the post acting as a lever under the strain of the bite of the lower teeth.

(4) A liability to loosening and rotation of the post.

Of the collarless crowns, the Logan possesses many of the good qualities of an ideal crown, of which (1) the natural appearance and shape, (2) the thoroughly firm union between the crown and the post, (3) the strong and reliable post, are the chief. It has, however, the disadvantage of requiring a long and tedious operation for fitting, which is inseparable from its character of a combined crown and post.

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*Extract from Journal of the British Dental Association.

I have found that when adapting these crowns much time can be saved to the operator by getting the rough fitting of the tooth and post done in the workroom to a correct model procured after the following plan:

At the first visit, having shaped the root, reamed the canal, and chosen the correct shape, size and color of the tooth, I take an impression of the surface and interior of the root in gutta-percha by the aid of a copper pin and diaphragm. The diaphragm is made of a small piece of No. 7 or 8 copper plate about the shape of, but slightly larger than, the transverse section of the root of the tooth on which one is operating; the pin is of copper, about three-fourths of an inch long, rather smaller than pin size, and is soldered to the diaphragm in such a manner as to project about five-eighths of an inch on one side of the diaphragm, and one-eighth of an inch on the other. I choose copper because it is so readily bent or cut to accommodate itself to any obliquity of the root face of length of root canal.

To take the model of the root a piece of Gilbert or other gutta-percha is softened and placed around the long end of the pin and on the contiguous surface of the diaphragm; this is carried to the root and pressed firmly home by grasping the short end of the pin in a pair of pliers; whilst this is still *in situ* on the root, a bite must be procured by taking a small piece of softened beeswax, and press it on to the short, exposed end of the pin, and allow the patient to bite home; the wax is then removed, and an impression taken in stent over the diaphragm and gutta-percha in a small tray of such size as to give the two contiguous teeth; a small stent impression of the two opposing teeth must also be secured. These impressions are sent to the workroom, where models and a bite are made, to which the workmen can do all the rough fitting, so that at the next visit only the fine fitting touches are necessary to be done in the mouth. I find it a convenient plan to keep a number of oval or round pieces of thin blue articulating paper, each having a hole punched in the center, ready at hand to assist in the final fitting of the crown to the root.

When fixing any of these crowns without a collar, I prefer to use a thin wafer of base-plate gutta-percha between the base of the tooth and the face of the root; this is a very reliable and durable variety of gutta-percha first introduced to my notice by my friend Mr. Baldwin. The wafer of gutta-percha not only protects the surface of the root with an accurate fitting imperishable cap, but also prevents the fluids of the mouth gaining access to the osteo cement with which the post is fixed.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

To Clean an Oil Stone.—Wet the stone and rub with sapolio. This leaves a fine, clean surface.—*W. H. Craig, in Pacific Dental Gazette.*

Repairing a Vulcanite Plate.—Instead of dissolving rubber in chloroform, use the ordinary bicycle cement. It gives perfect union between old and new rubber, and simplifies the work of repairing very much.—*W. T. Martin, in British Dental Journal.*

To Repair Gold Crowns.—To repair crack or hole in gold crown burnish over same piece 22 or 24-carat gold sufficiently large to cover space, flow upon same 14 or 18-carat gold solder, place it upon crack or hole with soldered portion in contact with latter, hold together with pliers, heat gently, and the patch will adhere readily to crown.—*J. A. Richards, in British Dental Journal.*

How to Obtain Good Engine Saws.—Dr. J. C. Schuller, of Center, Texas, says that very good saws for the engine can be obtained by applying to a jeweler, and asking him to attach ratchets from old watches to the end of engine points. He says they are of the highest tempered steel with saw edges and well sharpned, of various sizes and thicknesses, and that the jeweler can afford to furnish them, mounted, for about ten cents each.—*Items.*

Taking Impressions in Difficult Cases.—Dr. Laurits Bosgard, speaking of taking impressions in difficult cases, recommends mixing plaster of Paris with one-third of its bulk of finely powdered pumice stone. He says that in cases where there are heavy undercuts or teeth standing alone, this mixture breaks more readily, whilst it gives as clear an impression as with plaster alone. —*Items of Interest.*

Local Anesthetic.—Dr. Robert Wakefield, of New York, recommends the subjoined as an anesthetic free from toxic effects or sloughing:

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Cocain mur., grns v.
Boracic acid, grns viii.
Ext. Hamamelis.
Aqua distil. aa z i.

—*Items of Interest.*

How to Keep Root and Gums Free from Moisture While Preparing to Set Crown.—After wiping out and drying with hot air, take a piece of Gilbert's temporary stopping, and, after warming it, press it over the end of the root and surrounding gum. This will perfectly seal up the end, and it will be as dry when opened as when it was closed. You can then take all the time you desire to mix the setting material, and not worry for fear of moisture.—*L. C. Jones, Cosmos.*

Points to be Avoided in Making Irregular-shaped Inlays.—Don't make undercuts in a cavity before taking the impression. Don't use common plaster of Paris for the mould; use only the best. Don't mix salt or any other foreign substance in the plaster to hasten the setting. Don't overfire an Inlay. Don't cement an Inlay in position without serrating the back. Don't grind the surface of an Inlay. Don't insert a badly-fitting Inlay or an Inlay of bad color.—*Ash's Quarterly.*

Nitrous-Oxide and Ether by the Open Method.—A. H. Miller advocates the commencement of anesthesia with nitrous-oxide, and, as soon as anesthesia is complete, the removal of the inhaler and the substitution of the ether cone. He has notes of 160 cases in which no one has been conscious when the change was made, or has experienced anything disagreeable from the anesthetic. The average time required in his cases for anesthesia has been 3.05 minutes.—*Annals of Surgery.*

The Care of the Hypodermic Needle.—Medication by means of subcutaneous injections has come into such extensive use as to make the matter of keeping the little apparatus clean one of everyday importance. Dr. Belin, *Normandie medicale,* speaks from an experience of two years of the convenience of a small hand-bulb for forcing out the last remnant of liquid from the needle. He remarks that a solution of caffeine is one that is particularly injurious to the needle.

USE OF COMPRESSED AIR IN CLEANING TEETH.—We are called upon to clean teeth almost as a man sends his soiled linen to the laundry. The *debris* and green-stain at the neck is enough to make one almost change his occupation. But here we use a tube containing about an ounce of peroxid, full strength. A pressure of air full twenty-five or thirty pounds will so divide this solution sending it in every nook and corner, that what has taken half an hour to remove will melt away as by magic.—*W. H. Povall, Cosmos.*

AN APPLICATION FOR DISEASED MUCOUS MEMBRANE.—The diseased mucous membrane of the buccal cavity is frequently called to our notice for treatment. Sometimes in the infirmary, when the children are too young to intelligently use a wash or a gargle, we have prescribed for them a wash that the mother or nurse applies on a soft bit of linen:

Hydronapthol	3 grains.
Bicarbonate of soda	1 grain.
Distilled water	4 ounces.

Frequently we have made use of the iodide of starch, dusting that over the diseased mucous membrance. I think we have had more benefit from the iodide of starch, which I think is 95 per cent starch and five per cent iodide, than any other medicament which we have employed in the mouth. Another remedy which we use is eight grains of chloride of potash to ten ounces of water.—*John I. Hart, in Items.*

JACKET CROWN.—The doctor first made a tube of platinum lapping the edges, instead of butting them, as is usually done for gold crowns. He ground out the lingual surface until it was thin and could be burnished, and then the platinum was soldered over the lingual surface of the crown. The labial surface was treated in the same way and burnished. The labial surface of the tooth was ground out thin, and then a suitable facing was selected and ground to suit the case.—*Dr. J. C. Gilbertson, in Pacific Dental Gazette.*

A New Method of Banding the Logan Crown.—Grind a Logan crown to fit the root as usual, make a platinum band to fit the root and to extend above its edge, solder with pure gold, grind the gingival edges of the crown to fit into the band, remove both from the houth, and cover the junction of crown and band with enamel body, running the body over the labial surface of the band if the band is not entirely concealed by the gum. Place in a furnace and fuse the body. I use Custer's electric oven.—*A. H. Ketchem, in Cosmos.*

Carbolic Acid and Cocaine for Pulp Extirpation.—Some writers have advised alcohol for taking up the cocaine for pulp extirpation, but I prefer the carbolic acid, for three reasons. First, it is a fairly good local anæsthetic itself. Second, it acts as a styptic, and consequently renders the resulting hemorrhage easier to control. Third, if it produces a thermal change over the pulp, it is never so noticeable. Still others have advised the mixing of cocaine with several medicines in the form of pactes, but the carbolic acid treatment is simple as can be, and certainly is ideal in its effects.—*A. B. Kelly, in Dental Clippings.*

Ethylate of Sodium for Removal of Gum Tissue.—Dr. Williamson said there were one or two points he should like to speak about with regard to the removal of the gum where it had overgrown the root. No one had mentioned the use of ethylate of sodium, which was useful in removing the gum. A pellet of cotton was put into the ethylate, the superfluous ethylate squeezed out, and then the pellet put on the gum and pressed down with gutta-percha or cotton wool. In a few minutes the gum was pretty well pressed out. His experience was that the pain was not very much, and it could be modified by using cocain.

Ready Removal of Gold Crown.—Dr. Ottolengui gives his method in *Items,* as follows: "I drill through the gold crown a little hole about on the line where you would suppose the top of the crown had been attached to the band, on the line of union between the crown and the band, along the buccal surface. Drill that hole into the cement as far as you can conveniently do so. Follow with a round bur, enlarging it without cutting out much of the cement. I get the hole large enough to pass into it a good solid instrument, usually one of the heavy straight pluggers. That is pushed into the hole until it fits snugly; then I have a lever with which to force the crown up. Ordinarily the crown can be tipped off. If it is tight there will probably need to be some up and down movement until it comes off."

THE EFFECT OF MERCURY ON GOLD BANDS.—Mr. J. Husbands said that with regard to the effect of mercury on the gold bands, a little while ago an invalid lady had a case which had been made some years by another dentist and the band had come off. A gold band was put on and two or three days afterwards the band came off. He could not make out the reason for it and another band was put on, and in examining the tooth on the distal side there was found an old amalgum which had had a bad effect upon the gold. Then a different kind of band was put on and answered very well. He had also had a crown which came in contact with an amalgum filling which went very bad on the cervical edge and the crown came off. It had been in contact with a large contour of amalgam. He had had several experiences of those bad effects.—*Journal of the British Dental Association.*

A LARGE FLASK.—A large flask for vulcanite work, will often be found very useful. This is especially the case when making full lower or partially lower dentures. The models for such cases are often quite weak on account of their "horse-shoe" form, and when it is sought to cut them down sufficiently to get them into an ordinary size flask, they are frequently broken, unless such cutting be done with great care. Indeed, a misfortune of this kind often occurs when removing such a model from the articulator, which entails considerable trouble to repair such a break, and even when repaired it is never so certain as before the break occurred, so that a large vulcanizing flask is particularly handy to have for these cases. A flask of this kind will be found in the "*Rochester flask*," which will be found sufficiently large to accommodate unusually large models, as well as sufficiently deep to permit a good body of investment.—*T. F. Chupein, in Office and Laboratory.*

EXTRACTION OF DIFFICULT ROOTS.—As an example, take a left inferior bicuspid root, the crown of which is decayed off below the gingival margin. First, take a small spear drill and drill in the direction of the pulp canal until it enters well into the solid dentine. It matters little if the drill pierces the apical foramen, as it causes but little pain if the tissues are not inflamed. Next, take a drill or bur the size of the screw intended to be used and enlarge this canal. Then with right angle tap screw into this canal, cutting threades for the screw post. The screw post best adapted for this is "How's" bright metal screw post, size "B." Screw the post in the root, grasp the screw post with a pair of flat nosed pliers and extract the root. Instead of using a small drill first, a drill of full size of the screw post may be used at once. By using the former method, less pain is caused by the drilling, especially if there is pericementitis and circumscribed hypercementosis. I use the right angle tap and hub attached, because it is shorter than the How screw hub and tap and can be used for any root. Space is valuable in some mouths. By this method the most frail roots are extracted with ease, and without injury to the gums or alveolar process. Patients are delighted with this method, and it gives the dentist satisfaction.—*W. K. Hartzell, in Itmes.*

OPERATING STOOLS AND ELECTRIC POWER IN DENTAL PRACTICE.—The advantages of the sitting posture are very great, even where the ordinary treadle engine is used. But where an electric motor is used for driving the engine they are immnsely multiplied. Fatigue is reduced to a minimum, and the hand-piece is far more under control. I do not believe that the cleverest operator can treadle his engine whilst operating without giving some swaying motion to the body, and consequently to both hands. Continuous practice certainly gives great command over the body whilst treadling, but every bit of progress towards perfection in this matter adds inordinately to muscle strain and consequently to ensuing fatigue. But even the most expert will to some extent lose perfection as a heavy day's work progresses, and fatigue begins to make itself apparent. The operating stool alone enables one to preserve a greater control over the swaying motion produced by treadling; but the electric motor in conjunction with the stool abolishes all motion, and enables one to work most delicately with ease and comfort. The advantages ensuing from the use of the stool and motor together are truly immense. They can only be appreciated by those who have tried them. That they are rapidly becoming more widely appreciated is shown by the fact that the manufacture and supply of these appliances is beginning to boom. I am told the makers cannot turn them out fast enough to keep up with the demand. It is a matter of astonishment that they have not long since come into universal use.—*C. S. Reed, in Journal of the British Dental Association.*

EDITOR'S NOTES.

AMERICAN DENTISTS DULL ORATORS.

The editor of the *British Dental Journal* refers to the American dentists as dull orators. In his editorial regarding the late International Dental Congress held in Paris, he states that:

"The study of the various nationalities who made part of the late Dental Congress must have been a source of great interest and amusement to the quiet observer."

"It is said that an Englishman takes his self-consciousness, and an American his great faith in his country, with him wherever he goes, and if there is one thing more than another that the Paris gathering has proved it is that fact."

"These national characteristics of all those we met at Paris were as unmistakable at all times, but were practically evident if by chance they were called upon to speak in public. Take the president of the British Dental Association; twice at least he was called upon to speak apart from the papers he read, and each time he was the type of the Englishman abroad; solemn and dignified, and preternaturally stern, he seemed conscious that the eyes of Europe were upon him, and braced himself for a mighty effort. The result was he was dull, and painful to listen to, the more so as he has a knack of saying the most antiquated platitudes in a way that leads you to expect wisdom greater than Solomon's. No one, in fact, to alter an old saying, was ever as solemn and didactic as the president looked."

"The American speakers were also very characteristic, though in a very different way. They seemed to live in a halo of pride in themselves because they were born Americans. One was struck with the thought, 'What a terrible thing it would be if these men should one day wake up and have the painful truth forced upon them that they were not Americans.'"

"The result was that no American could say five words in a public speech without referring to 'My country,' or 'My countrymen.'"

"We have been taught to regard the American as an exceedingly witty public speaker, but if this be so those who spoke in Paris hid their light. Next to the English speakers the Americans were the dullest of orators," etc.

We have had the impression, from dental society proceedings in America, that our American dentists were not bad orators. Some at least seem to have been born orators, with such a command of language that words drop from their mouths with apparently as much ease as the white, downy snow falls from the cloud veil of the heavens. Their enunciation and expression would do credit to an Irving, and their eloquence rival a Webster. Yet, perhaps we do not know what oratory is. Perhaps our English friend has a different definition for this great gift. But after all, it is not the oratorical powers of a man that determines his dental qualifications.

BUTCHER DENTISTS.

The following advertisement appeared recently in a local paper of one of our Ohio towns:

> Having disposed of my butcher shop I will devote my entire time to the practice of dentistry. Gold crowns, $2 to $4. Gold fillings, 75 cents up. Best set of teeth, $5, including extracting. Bridge work, $3 per tooth.
> DR. C. N. HOUSETON.

We have heard of dental butchers in the profession, but this is the first instance we have noticed of a butcher dentist. In subsequent advertisements we shall expect to see notices like these:

"We make bully crowns."
"We use lamb-ellated gold and veal-ox alloy."
"We know how to steer-ilize everything that goes into a patient's mouth."

And in various parts of the office see signs like these:

"Free soup after extraction of teeth."
"A hot Weiner after every dental operation."
"Free lunch while you wait."
"Try our own pig-bristle tooth brushes."
"Swine-burn poetry recited on request." Etc., etc.

This man may be qualified to practice dentistry; perhaps sausage stuffing gave him an idea of tooth filling; or pig sticking, of lancing; or carving, of anatomy. His patients must decide his competency. There are, nevertheless, hundreds of men practicing dentistry in Ohio to-day who are totally incompetent, and yet we have to tolerate them on account of our lax law admitting them to practice. Yet some dentists in Ohio, who ought to know better, still cry that no better legislation is needed in the State and that the present law meets all requirements. Has it done so in the past? Answer for yourselves.

SOCIETY.

MEETING OF THE OHIO STATE BOARD OF DENTAL EXAMINERS.

The next meeting of this Board will be held in Columbus, O., beginning the last Tuesday in November, 1900. Those desiring to take the examination should write for full particulars and application blanks to the secretary, Dr. L. P. Bethel, Kent, O.

OHIO STATE DENTAL SOCIETY.

The thirty-fifth annual meeting of this society will be held in Columbus, O., December 4, 5 and 6, 1900.

An unusually interesting program is being prepared, and a number of prominent men from other States will take part in the proceedings. In the November issue we will present the program as arranged by the Executive Committee.

OBITUARY.

DR. CHAS. WELCH.

Readers of THE JOURNAL, especially the Ohio dentists, will be grieved to learn of the death of our esteemed brother, Dr. Chas. Welch, of Wilmington, O. He died Sunday, September 9, of heart trouble, due to inflammatory rheumatism. He was born in Wilmington, July 4th, 1850, and lived there all his life. He was a son of Dr. and Mrs. L. B. Welch, and when a young man adopted his father's profession, that of dentistry. He was a fine dentist, one of the best in the State, and he loved his profession, remaining a student in it, as well as a practitioner, until forced by sickness to leave his office. He had served as president of the State Dental Association, and was one of the well-known men at the annual conventions. He was one of the Directors of the Ohio College of Dental Surgery, Cincinnati, and has held other prominent positions.

Charlie Welch was a student in other lines, and was a well-informed man on many subjects, always being an entertaining conversationalist on branches of thought but few stuy. Next to his profession geology and archæology demanded his greatest attention and he was well posted on those interesting topics. His cabinet of specimens, partly inherited from his father, but largely added to by himself, is one of the finest in the State. Deceased was married to Olive Linton twenty-four years ago and to her he has since been a devoted and a loving husband. No children were born to them. but together they have lived happily, each for the other. A sorrowing wife and a heart-broken, widowed mother are left to mourn for one who was always devoted to them. In their affliction they have the sympathy of their many friends in the dental profession throughout the State.

THE

OHIO DENTAL JOURNAL.

VOL. XX. NOVEMBER, 1900. NO. 11.

CONTRIBUTIONS.

A METHOD OF REINFORCING A CONTINUOUS GUM SET OF TEETH—CONTINUOUS GUM WORK.

BY DR. J. B. BEAUMAN, COLUMBUS, OHIO.

Some time ago I made a promise to give some points in regard to the reinforcement of a continuous gum set of teeth, which promise I shall now fulfill. While I write more particularly for that purpose, I will also give some points in a more general line, not that I may enlighten those who are familiar with the work, but that it may be of benefit to the younger members of the profession.

My experience with continuous gum work dates back nearly fifty years, when it was first introduced by Dr. Allen. Some of my first work has done good service for nearly the same length of time, which surely is a commendation for this kind of work. There are some things essential to a successful set of continuous gum teeth.

Of first importance is for it to be so constructed that it may have the required strength to withstand the strain of mastication; a good adaptation to the mouth; perfect articulation, etc. In swaging, I have of late years gone back to the zinc and lead dies, and find them more satisfactory than the Babbitt metal and lead.

If the zinc is not too hot when poured, and the sand too wet, a beautiful die is the result. The zinc die should be burnished with a burnisher that it may not mar the platinum plate. When the plate is swaged and ready for the rims, take a square platinum and iridium wire, roll it through the rolls to flatten it a little, then with a file bevel one edge and solder narrow surface to the plate, having wire to extend round the entire rim of the plate, with bevel extnding to catch the edge of porcelain. When rimmed, try plate into the mouth, and if it requires reswaging, swage in the shot swage and not in the lead die, as in doing so one is apt to tear the plate and draw the rim out of place. Get articulation over the plate, set up the teeth, and invest in plaster and white lake sand in equal proportions. When the plaster has hardened, remove wax, straighten up the pins, and take a platinum and iridium wire and bend it close to the teeth, fitting under the pins of the teeth close up to the pins. This wire should also be rolled through the rolls to flatten it, so that it may not be bulky when the pins are bent down over it. This bar, or wire, must be bent down and flattened at the ends to rest on the plate—to be soldered to the plate.

While in this condition, take a small bur and with the engine drill holes through the plate for the small wire stays. A light square wire is preferable for these pins—point and round the end that goes through the plate and flatten the end that rests on the bar above. If one does not wish to drill through the plate, flatten the end of the pin and bend at an angle, forming a small foot to rest on the plate. When the holes are drilled, or the plate marked to locate the pins properly, notice by cut (Fig. 1) that these posts come between the teeth, forming a net work for the body to interlock, which makes a very strong plate.

At this point place a pin between the two centrals and after heating up case, solder the ends of the wire bar to the plate with a little pure gold—also the pin between the centrals, to hold it in place for further soldering. When cold, remove from the investment and the pins of the teeth not having been soldered, the teeth will come away and the plate will be free from investment while soldering the pins or stays to the bar and plate. For soldering the pins and bar to the plate and the rim, use a solder composed of three parts pure gold and one part platinum. In making this solder, first melt with the blow pipe and then remelt with the ark current to thoroughly mix the metals. Do not allow it to remain under the current for more than an instant or the gold will evaporate. When all the pins are soldered to bar and plate, grind off the pins that go through the plate (in case you have drilled through the plate), which removes all traces of the plate having been drilled. It is now time to reset the teeth and invest again to solder the pins of the teeth to the bar and plate, in case the pins touch the plate. In soldering the pins of the teeth, use a ten per cent. platinum solder, melted as the other. If the teeth come too close to the plate to prevent putting the network of wires under them, solder a heavy square platinum iridium wire on top of the plate and bend the pins down over it. Where there is room for the

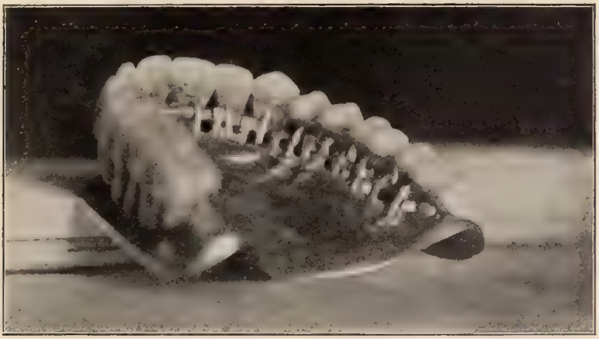


Fig. 1.

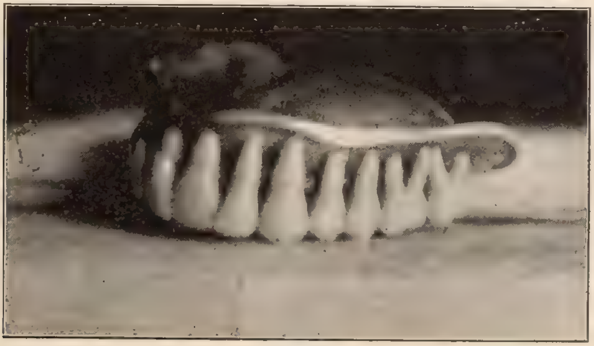


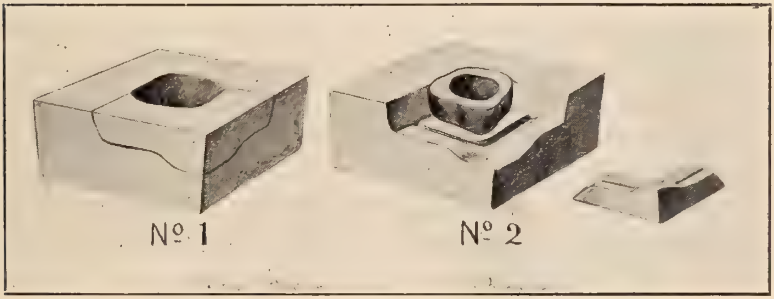
Fig. 2.

upright pins, the porcelain body will interlock in such a way that will make it very strong. Noticc that cut No. 1 represents the wire work on the inside of the teeth, while cut Fig. 2 represents the teeth on the outside. Where pure gold is used to solder the work, it spreads over the surface of the plate and prevents the porcelain from adhering to it. A plate made after this plan will endure much more strain than the old way of flat backing. The body will interlock so that to spring the plate, it would have to crush the porcelain between the pins. In putting the body and enamel on, one cannot be too careful in handling same. There are few who know how sensitive all kinds of porcelain are to chloride of sodium (salt) or any saline substance. Never wash a plate with porcelain on it with a brush that has soap or anything of the kind about it. If one desires to know the effect of salt on the porcelain, put a few grains in the water the body is mixed with and the result soon appears. Great care should be exercised where there is danger of any contamination. Keep the body and enamel perfectly clean. In putting the body on the plate, fill it up as desired, dry out well with a clean napkin and if great care is taken the enamel can be put on as well before baking as after. Do not bake to a full bake the first time. It will crack and all that will be necessary will be to fill up the cracks and imperfect points for second baking. Bring it to a full bake the second time, and should there still be imperfections, fill up and bake over. If care is taken, it will rarely be necessary to bake the third time. After being fully baked, each successive baking weakens the porcelain. The porcelain should not be over-baked, and at the same time should be fully baked, that it may be as dense as possible; porcelain left in a porous condition will absorb the saline fluids of the mouth and should repair be required at any time, rebaking will cause it to crack, become porous and rough, and perhaps ruin the plate. I know of no chemical and no amount of baking will eliminate this saline influence. To soak in hydrochloric acid will help it. It is not advisable to make the plate too light—not lighter than twenty-seven plate gauge. Economy in platinum is scarcely advisable, as one may have to repair in a short time and perhaps may have to put on a new set of teeth, which is discouraging to both one's patient and one's self.

METHOD OF MAKING AN AMALGAM CROWN.

BY HENRY BARNES, M. D., CLEVELAND, OHIO.

The crown here described is not intended to supplant gold or other crowns on the roots of molars, but is to be used in those cases of badly decayed and broken down roots which are not easily crowned by other methods and which, if so crowned are not much bettered so far as use and comfort to the patient are concerned.

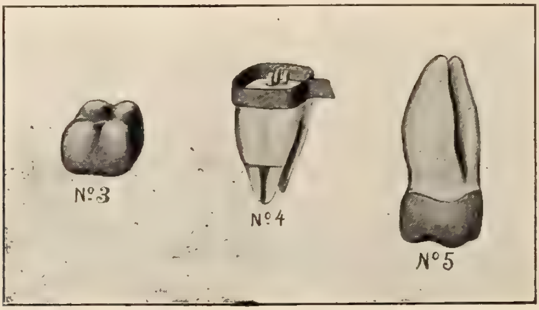


The method of manufacture and application of this crown may be described as follows: Procure a well shaped natural molar tooth and imbed it in a bed of plaster. While the plaster is still soft cut to shape for the matrix, taking away about one-third of one side of the matrix, then allow the plaster to harden. When cast is hard remove the tooth from the plaster, cover the tooth crown with thin tin foil, allowing surplus for that portion of matrix cut away, replace crown in the matrix, tamp the tin foil into the matrix, fill in the cut out portion of the matrix with plaster and allow it to harden. Then remove this section from side of matrix, remove natural crown and also the tin foil from the matrix. Replace the section in matrix and you have a perfect impression of the natural tooth crown, into which amalgam for the artificial crown is to be packed. Fig. 1 illustrates the matrix thus formed, and Fig. 2 shows the appearance of matrix with section removed and crown formed in the matrix.

To make the crown, take enough of quick setting amalgam to form the crown, and burnish into matrix, leaving the center of crown hollow. Allow the amalgam to crystallize, then remove it from the matrix, first taking away the partial section of matrix. The crown thus formed will then be perfect in shape as illustrated in Fig. 3.

Prepare the root as in ordinary cases, and place in the prepared root several pins of iridio-platinum, or other suitable metal, and then place about the neck of the tooth a thin narrow band of phosphor-bronze, German silver, or steel (see Fig. 4), and fill in with amalgam until the lost portion of the root is supplied.

Now having previously fitted the crown onto the root and having obtained a perfect occlusion, place the crown again on the root and if too large to settle down upon it and into the narrow band, shave off a sufficient amount of material from the sides thereof to make it fit approximately in place. Everything is now ready for the final operation, which consists of mixing some quick setting amalgam quite soft, and building it up in cone shape about the pins, allowing a thin layer to overlap the mesial, distal, buccal and lingual portions of the root. Now have your crown smeared on the inside with a little mercury, place the crown over the amalgam on the root and press it to place. Allow the band to remain on the tooth until the amalgam has set, then remove the band and polish the amalgam crown. Fig. 5 represents the completed crown. In finishing the crown do not allow the cusps to remain too prominent. And should you fail, at any point, to have sufficient amalgam in the crown, a little freshly mixed amalgam will fill in and you can shape as desired.

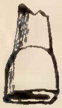


ANCHORAGE OF PORCELAIN SECTIONS BY MEANS OF WIRE.

BY W. A. CAPON, D. D. S., PHILADELPHIA, PA.

The proper means of retention of porcelain inlays or sections will have more to do with ultimate success in the practice of this branch of dentistry than other requirements. The joint and shade may be as near perfect as possible, but if the anchorage is insufficient the work is a failure, or to be plain, a patient may tolerate a poor filling of any kind, but if it comes out, whether it is porcelain or other material, then there is objection and suspicion of the operator's ability, especially so if there is a repetition of the trouble.

Ten or twelve years ago porcelain fillings were condemned as unreliable because of cement attachment, but time has shown this idea to be erroneous, and the profession has accepted this work as having its proper place, and the uncertainty has shifted from cement to proper anchorage.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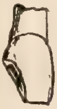
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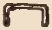
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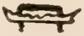
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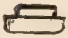
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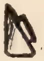
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Improper preparation of cavities will have considerable to do with failure of retention also, but that is a subject requiring practical means of illustration.

Porcelain inlays, corner or cross sections, are held in place by two methods, undercuts or grooves cut in cavity portion of porcelain, or wire imbedded in form of pins or loop. The former means is my preference whenever possible, because experience has taught me that small sections of porcelain have greater strength without the wire, for while it assists in retention it causes a point of weakness in the part of porcelain exposed to use. Therefore I recommend that use of wire attachment be reduced to such places as cross sections or corners shown in Figs. 1 and 2 where depth cannot be had through sensitiveness or close proximity of enamel plates.

The mode of procedure is as follows: Prepare cavity and make edges perfectly square and sharp, then burnish platinum foil, about gauge 50 over surface and into cavity or slot, for in many cases it is not much more, then make a staple or loop like Fig. 3 from platinum wire No. 24, and push it through opening in the matrice, keeping both in position on the tooth with left hand, Fig. 4. Mix small quantity of porcelain body with water and a little tragacanth into a stiff paste, and force about ends of wire and over surface of matrice, absorb excess of moisture with bibulous paper, and gently lift from tooth and fuse in furnace. This will firmly attach wire in position, and the foundation is assured.

This method is simple and saves time of investment and soldering, but more important than time is the insurance of pure material, which is improbable when solder is used.

The ends of wire projecting into body of material should be serrated. Wire has advantage over pins in being less liable to displacement.

Use continuous gum body for attachment, as it is higher fusing than most bodies on the market, and is reliable if several bakings have to be made.

Thicker platinum may be used if desirable, but if heavier the joint will be coarser and the metal more difficult to detach from the porcelain.

When the contours are completed and ready for adjustment, they will appear as in Figs. 5 and 6.

Fig. 4 shows a surplus of platinum foil which should remain until work is completed.

QUACKERY, REAL AND IMAGINARY.*

BY GRANT MITCHELL, D. D. S., PITTSBURG, PA.

The notion prevails among professional men that certain forms of advertising in the columns of the daily press are not only degrading violations of the Code of Dental Ethics, but quackery, in its first and worst form, is thus manifested.

I have recently given this subject some consideration, and although persuaded that a real and growing evil menaces the professional aspect of dentistry, I have been unable to reach the conclusion that it is in the nature of the cheap advertising "Dental Parlors," with which every city in the land nowadays is deluged, whose efforts to obtain "trade" are widely blamed for the troubles experienced by a large number of honest and capable practitioners—not fortunate enough to possess clienteles of the luxurious and exclusive circle, nor conscienceless enough to defraud with worthless services.

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*Read before the Northern Ohio Dental Society, June, 1900.

I am not convinced that this class of institution threatens our professional well-being, nor that it is blamable for the conditions, grown up in our midst, which do. On the contrary, I hold the ethical dentists answerable, both for the existence of the evil alluded to, and the rapid multiplication of the scorn inspiring "Parlor." I charge them with a gross misinterpretation of the Code of Ethics, and an utter misconception of the manner of maintaining the moral tone of a profession. Their notion of the code is Section 3, Article II., with a lot of rhetorical trimmings around the edges, as a make-believe. Their idea of preserving professional dignity is to induce the rabble to refrain from newspaper advertising, under the promise that they will thus become "professional," whether they be qualified or unqualified, educated or ignorant, of refined instincts or blackguards.

Since the organization of the first one to the present time, it has been the custom of dental societies to invite all who have not actually been convicted of flagrant violations of Sec. 3, Art. II., to join them and become "professional."

As associations, they gather around the doors of the numerous dental colleges, each spring, eager to pounce upon the outpouring graduates, and such as can be enticed into the societies, and will subscribe to Sec. 3, Art. II.—regardless of their class-standing—are saved from the fateful allurements of a life of quackery.

We have no ideals—no measures about Sec. 3, Art. II. And all who confess that faith are the chosen "professionals." All others, quacks.

The results of this method of promoting professional virtue are now being manifested in the struggle many skillful and honest young men are undergoing to make ends meet in a profession which ought, reasonably, be more remunerative than ordinary drudgery; in keeping the public in darkness with reference to the practical possibilities of scientific dentistry, conscientiously performed; and in the encouragement of the multitude of unprofessional unprincipled failures, springing almost daily into existence.

The supposition that newspaper advertising is the lowest depth of quackery to which a man can descend is as grave an error as the establishment of independent dental schools.

That it is unnecessary for capable men, admits of no doubt. That vauntful or bargain-counter forms are undignified and unseemly, is incontrovertible. But that in any and every form it constitutes a crime, punishable by professional decapitation or ostracism, does not immediately follow.

That a vast majority of newspaper advertisers are quacks, is undeniable; but I am not persuaded that they are quacks because they advertise;—rather am I of the opinion that they advertise because they are quacks. Moreover, I am so far from certain that all quacks advertise, that I am willing to go on record with the assertion that only a few quacks advertise.

Quackery, in its true sense, means boastful and false pretensions to any art.

Looks over the rolls of the Northern Ohio, or any other dental association, and how many names could be checked off as coming within that definition?

Think of the number of men, not members of dental societies; not studious, not expert, not progressive; who stand well in their communities, because of pleasing personalities; who are considered "professional," and are eligible to membership in any dental society, because they do not advertise.

Apply our definition to them, and where will they be found?

My friends, I contend it is these "professional" pretenders to our art who menace us with professional annihilation. It is their ignorant and unskillful manipulations that threaten to reduce dentistry to the level of an ordinary trade. It is their failure to comprehend and employ correct scientific measures in curing the diseases of and preserving the dental organs, that drives people to the unscrupulous advertiser, who holds out the inducement of lesser charges. It is their inability to exact generous fees for services they know not how to render that makes living a burdensome struggle for their more capable co-workers.

Let me illustrate. At the office of an ambitious, educated and expert young operator,—just establishing a practice,—a patient in easy circumstances, but economical; influential, but cautious, presents with a tooth—any one you please—manifesting infection, with resultant inflammatory reaction in the peridental membrane, at the apex of the root. The patient's recuperative powers, because of certain social or other excesses which she is unwilling to abandon, are not as active as could reasonably be desired, and, hence, the proper treatment to effect a return to permanent quiescence will involve several sittings and hours of exacting and exhausting labor. Labor more destructive of vital energy than any other, because of the high and continuous nervous tension under which the operator is compelled to work.

The patient knows, in a general way, that a neighboring dentist, a member of the local society, and considered "professional" (because he does not advertise), is "moderate" in his charges—never having been known to exceed a modest sum for any given operation. She is not aware, however, of the resources at the command of the "professional" moderate charger for covering his incapacity, nor for furnishing plausible pretexts for extracting such teeth.

The ambitious, educated and expert young man knows not only the moderate charger's methods in the matter of fees, but his reasons for them as well. He also knows that a truthful explanation of the matter is forbidden by the Code of Ethics, and, in any case, would probably expose him to unjust suspicions. And, moreover, if he performs the service as necessity requires, and makes a charge at all commensurate therewith, without such explanation, he gains the reputation of being immoderate and exhorbitant in his prices. He, therefore, is confronted with a dilemma, thrust before him by a "professional" pretender—an arrant imposter, a rank but genuine quack; and must choose between the sacrifice of a valuable organ with a bridge substitute, and a hypocritical excuse, or perform a proper, thorough operation at a price which damns—be it high or low.

If his fee be sufficient to instil within him a little respect for himself and his profession, he is rated as an extortionist "leg-puller." If it is not enough to do this, it is insufficient to warrant the great expenditure of energy; it is insufficient to justify the years of training that fitted him for the professional performance of his duties. And if his charge be "moderate," in the sense that the other man's charges are moderate, he cannot exist if much of such work has to be executed.

I have with me two specimens of work which I will later pass among you for inspection. The first was made by a dentist in the City of Allegheny, a member of the Odontological Society of Western Pennsylvania; a "professional" man, in the sense that he never advertised; a quack, because of his utter incapacity to properly perform the simplest functions of the profession in which he presumes to operate. He is a fluent talker, and, hence, stands well in the society. He is a blatherskite, because he cannot do what he talks, and is a danger to the dental profession for that reason.

He charged and received the "professional" fee of twenty dollars for this denture. The gentleman for whom it was constructed was dissatisfied, both with the appearance and the utility oi the plate, and upon receiving the assurance that nothing better could be furnished him, he went to a "Dental Parlor,"—the office of an unmitigated advertising quack,—where for eight dollars he got a plate so infinitely superior to the one I will show you that it will ever be a fruitless waste of time trying to convince that gentleman that "professional" dentists are superior to "quacks."

The second plate I will hand you for comparison is the product of a prominent "quack" institution in the City of Pittsburg. This sample came into my hands for repairs—it was broken eating whipped cream. The color of the teeth, however, was inharmonious, and I replaced them with new ones upon a gold base, which doubtless relieved me of the embarrassing necessity of explaining wherein my "professional" services were many dollars more valuable than an almost faultless "quack" production.

It is far from my purpose, in passing these specimens among you, to offer the faintest recognition or endorsements of quack institutions, for I regard them as quackish in every sense of the word.

I detest their methods of gaining patronage, because they are undignified and unprofessional in the lowest degree. I despise their incapacity to intelligently practice dentistry, because it is quackery of the worst form. I abhor their business dealings with the public, because they are dishonest through and through. But if these institutions can perform the simpler, mechanical parts of our avocation in a manner more creditable than many of the supposedly "professional" practitioners, then I say unto you, if the public is able to draw a comparison between us and the so-called quack, it cannot be to the quack's serious disadvantage. It is alone in the mechanical features of dentistry that the public is possessed of discernment.

The dullest person can appreciate the lustre of a gold filling, but the highly cultured have no notion of the conditions which govern the choice of filling materials or decide the nature of an operation. The stupid can experience the discomforts of an ill-fitting denture, but the erudite have no conception of the process involved in the treatment of putrescent pulps. The simple-minded can be sensible of a deft extraction, but the needle-witted have no comprehension of the pathologic conditions at the apices of roots and in the peridental tissues, nor the patience, knowledge and skill necessary in combatting them.

And because of these facts, I am firmly of the opinion that the line of separation between professionalism and quackery should be more distinctly drawn.

I am not content with being called a "professional" man if so many of my evident inferiors are equally entitled to the designation, simply because they subscribe to a Code of Ethics, about which they know little, and care less.

I demand, before conferring upon them so honorable an appellation, that they be required to demonstrate their fitness to wear it with a dignity becoming the name.

What matters it if one hundred and forty of our Pittsburg dentists were confessed advertising quacks, so long as the remaining forty are truly professional gentlemen?—professional in the sense of culture and fitness for the scientific practice of a noble calling. Would it not be far easier for the public to distinguish the capable man and reap the benefits due them from an all essential branch of the medical art? Would not the dental profession be benefitted by receiving more of the just recognition due it as a specialty in the healing science?

As matters now stand, there are one hundred and forty quacks practicing at dentistry in our city. Of these, twenty advertise and one hundred and twenty do not. Of the one hundred and twenty who do not advertise, eighty-two are members of dental societies; a total of ninety-six are supposedly "professional," while twenty-four are admittedly unprofessional—though they do not advertise. And out of a grand total of one hundred and eighty practicing dentists, only forty are really educated, skillful, professional men. And what I say of Pittsburg is correspondingly true of every other city in the land.

Is it any wonder that quack "parlors" thrive, when they offer for a lesser fee services which, time and again, have proven equal to the so-called "professional" product?

Do we not encourage that sort of institution when we set up an antiquated Code of Ethics, as our single measure of professional purity?

I know a young man in the City of Pittsburg who struggled for three years under the adversity of codisms, and when his financial resources were nearly exhausted he put an "ad." in the papers, offering to make gold crowns for three dollars and seventy-five cents—other work relatively cheap. To-day he owns seven offices in different cities; employs twenty-eight men, whom he pays from seven to thirty dollars per week each; and his check "goes" at the bank for thousands. What made this change of circumstance possible? A hundred and twenty incapable quacks, robbing under the guise of professional men, and the gradual awakening of the public to the fact that the three dollar and seventy-five cent crown was the same brand they had hitherto been "professionaled" into paying more for. And every person who has been bamboozled in this manner can never again be brought to believe that professional men are superior to "quacks," unless we adopt a higher standard of professionalism than is set forth in Sec. 3, Art. II., of our ancient and never-was-read Code of Ethics.

My conception of a professional man is, one who is honest, straightforward, intelligent and skillful. A man whose integrity never swerves, because it is so bred in him that it has become an essential part of every cell of his moral centers; whose intelligence has been cultivated to such a degree that he can grasp in its fullness whatever vocation he chooses to follow; whose skill has been developed to a fineness that he can accomplish "whatsoever his hand findeth to do." A man who combines strength with delicacy, firmness with gentleness, and determination with sympathy. One whose habits are clean, from body to mind. And it is my further conception that dental societies ought to be composed of professional men.

I do not approve of the present method of inviting T Dick and Harry to join, simply to keep them from parading, the daily prints, their inherent characteristics.

I do not believe that the "moral influence" with which we surround them is so dazzling effective that it more than holds their true natures in partial subjugation. And I am fully convinced that refraining from nauseating newspaper twaddle will never instil in them a single principle of conservative dentistry, nor broaden their intelligence in any direction.

I am of the opinion, therefore, that if dentistry is to be spared a further degradation, a reformation is imperative. I believe the reformation ought to begin in this, the oldest and best local association in the United States.

It is my belief that the present Code of Ethics should give place to that grander, more comprehensive code: "Whatsoever ye would that men should do to you, do ye even so to them."

Establish a standard of excellence in our societies which in all cases hereafter must be reached by aspirants to membership, or grant them only the privilege of attendance. Deny admission to your meeting to no one, but officially recognize "professional character" only on the indisputable evidence of its being possessed.

If such a policy be adopted and adhered to, I venture the assertion that ten years will have so weeded out the ranks of dentistry that it will look like the profession that it really ought to be; for, on the principle that "Ye shall know them by their fruits," people will have so learned to differentiate between the truly professional man and the real quack—whether he advertises or not—that capable men will no longer need to hesitate when difficult and trying cases present themselves. I believe this to be our sure—our only salvation.

INTERNATIONAL DENTAL CONGRESS.

(Continued from Page 473.)

HELD IN PARIS AUGUST 8-14, 1900.

The Founding and Functions of the Asile Sainte-Anne.

BY F. POINSOT (PARIS).

In his essay M. Poinsot gives an account first of the circumstances under which the institution of St. Anne was conceived, with a short history of these events, and provides information as to the nature of the cases met with in the general clinical practice which came under his attention. The following is a brief summary of his interesting paper:

In 1884 certain observations regarding the serious changes of the mouth coinciding with cerebral and nervous conditions induced him to consult Dr. Bouchereau, the physician of the Asile Ste.-Anne at Paris, on this important question. He then learnt, to his great astonishment, that the question was one which had never up to that time received any attention. An examination of the mouths of certain patients of the establishment was most fruitful in pathological data, and he was requested by Dr. Bouchereau to establish a dental clinic in the asile immediately. The course

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*From report in The British Dental Journal.

was carried on gratuitously until 1891, when, after repeated petitions, it received official recognition. In 1892 an out-patient dental department for the deserving poor of Paris was established in the interests chiefly of those who were suffering from mental and nervous affections. Since then all the asylums of the department of the Seine have been endowed with similar institutions.

During these last years about 2,500 cases, or an average of 3,000 dental operations, have been registered, and dental and medical students and doctors have come to visit and help the establishment as far as they were able. The former theories have been well established, and, moreover, have proved that the dentist can greatly aid both in diagnosis and prognosis of cases involving nervous and mental diseases.

The physical disorders of dentition are due to two opposite causes, the first that of excess of, and the second insufficiency or arrest of nutrition. In the first case we have hypercementosis with compression of the nervous filaments, as in cases of alcoholism, etc.; and in the second of insufficiency or even want of nutrition there is evident the slow but certain evolution of mortification of the pulp, with the concurrent accidents of auto-infection. The color of the teeth is also of importance, giving the appearance of an over-ripe fruit in cases of excess, and a dull or darkish grey after a certain time of poor nutrition.

The author then goes into detail in regard to the appearance and condition of the teeth, and passes on to the consideration of the process of their death. He says the mortification of the teeth is generally caused by troubles resulting from poor nervous functions, and this is seen in various conditions. The arrest of nutrition of the dental pulp due to troubles connected with insufficient central nutrition causes, with the mortification of the pulp, the arrest of calcification of the tooth, and so suppresses the dental growth, etc.

Passing then to the consideration of the importance of this question, he says that from the point of view of prophylaxis the education ought to be kind, firm and just, and the moral treatment of the young patient in accordance with these views. The physical treatment should include fresh air, exercise, good food and careful hygiene of the mouth, with supervision on the part of the dentist. He then passes in review the different classes of patients, and their treatment, good or bad, which have come under his notice.

Summing up the treatment on the part of the dentist in cases of nervous patients, or those whose minds are alienated, he says it should be of two kinds—psychic and therapeutic. Psychic, in the first place, because this class of patient expects sympathy in his troubles. Be the patient young or old, everything must be endured, even undeserved reflections. The state of certain patients being not even suspected by their families, the author advises that the latter should be warned of it with the greatest possible tact, such as by habitually asking if the patient is not sometimes of unequal temper, to which question the answer is generally in the affirmative.

To make our therapeutic intervention fruitful, it is indispensable that we should proceed in the most ethical manner possible. The examination of the mouth should commence usually at the eruption of the permanent teeth, and should guard against premature extraction, from which the most disagreeable accidents may result, and to avoid which it will be necessary sometimes tc preserve even teeth badly diseased, by every care up to the period when they are replaced, as long, that is, as these teeth do not produce serious complications, in which case our care should be redoubled in the effort to aid nature by means of some special apparatus introduced at an opportune time.

The choice of foods is also of extreme importance. We must also take the greatest care of the mouths of such patients, removing tartars, preventing or carefully treating gingivitis, seeing that the food is well masticated, and allowing little to be drunk during meals; treating the changes which occur in the teeth according to the rules of art, giving the preference to gutta-percha as filling material, and, above all, being pitiless in the matter of extracting dead teeth and roots. It will, of course, be necessary to replace missing teeth so as to ensure proper mastication, and to act as a support for those which remain. The prosthetic appliances must also be used in view of the prevention of the lowering of the jaw, which is a matter of extreme importance for the patient.

DENTAL INSPECTION OF SCHOOL CHILDREN.

BY DR. VERSLUYSEN (ANVERS).

In this essay Dr. Versluysen gives an account of the dental inspection of the free communal schools in Anvers, which has existed now for eighteen months, and is undertaken by two qualified dentists. This inspection takes place three times a year, or about every four months, at the time and date which is convenient to the inspectors. The schools which they shall inspect are, however, allotted to them by the authorities. At each visit the dentist examines all the scholars, giving more attention, however, to such cases as are pointed out to them by the headmasters as being of defective dentition, or as suffering most frequently from their teeth. His attention is chiefly directed to causing the normal growth of the teeth, and in urgent cases the pupils are sent or taken to his surgery. The duties of the dentists are confined to extraction of the teeth, or to applications to remove pain, etc., but do not include any prosthetic operations, or the making of artificial sets. Every four months, after having completed his round of visits, the dentist sends to the authorities a circumstantial report of all that he has done. This, in a few words, is the *modus operandi* in the communal schools of Anvers.

Having given this outline of the system, Dr. Versluysen passes on to a detailed account of the various cases which come under his notice, beginning with abnormalities which he finds occur in the following order of frequency: In upper lateral incisors, premolars, central incisors, canines, second bicuspids, first molars, and lower incisors.

He notes the following minor operations which have been performed: Four re-implantations, seven implanations, and five transplantations. In the case of re-implantations two were re-implanted after resection of the periostial cyst, one followed an unnecessary extraction, and the fourth followed as the result of an accident. There were seven implantations for congenital absence of the teeth, these being two central superior incisors, two upper lateral, two upper molar, and one upper canine. The five transplantations were all heteroplastic, that is, grafted teeth belonged to another person, and they all died. The combined result of these sixteen cases gave six failures—that is, it was necessary to take out the teeth after a short time on account of resulting disorders. As a final word in the matter of heteroplastic transplantations, the author says that it is very necessary to inquire carefully into the antecedents of the person who provides the tooth, because there is an evident possibility of inoculating tuberculosis or syphilis by such a process.

He met with one case of luxation of the jaw from an unknown cause which was reduced according to usual methods. He noted twenty-six cases of exanthematous necrosis, of which fifteen were due to scarlatina, three to measles, and one each to smallpox and diphtheria, while six were from unknown causes. He also met three cases of epulis.

The Surgical Treatment of Absorbed Roots by Sponge Grafting.

BY MR. G. BRUNTON (LEEDS).

Dealing with the surgical treatment by means of sponge grafting of roots whose crowns have been absorbed, perforated or incompletely developed, Mr. Brunton says that such conditions may be diagnosed by the Roentgen rays, by the aid of a short length of wire, such as piano wire very fine, and terminating in a hooked or grooved point, with a register which may be glided to the edge of the gum, or to the canal opening, according as the operator desires.

It is evident that a foreign body, such as a post employed in the filling of root-canals, even if it is inserted with the greatest care, will not prevent the process of absorption, and will become an irritant, and a root so treated will not long remain healthy. In support of his views Mr. Brunton quoted examples occurring within his experience.

Sponge grafting is a rational and simple operation, the sponge (*spongia officinalis*) being an animal, low though it may be in the scale of creation, or the skeleton of porous marine animals, from which the gelatinous flesh has been removed.

If this introduced into a suitable place, such as at the extremity of a root in the part which has been absorbed, the fibrous tissue of the human economy unites with the fibre of the sponge, and forms a graft which completely fills the space caused by absorption, and prevents its further continuance. Besides, it prevents the irritation caused by the obturating material, while acting as a seal or plug in regard to the extremity of the canal, in this way allowing the operator to fill the canal, or plug the extremity, and insert a pivot.

The sponge used in such operations is the finest Turkey sponge, perfectly free from sand, thoroughly washed, sterilized in phenate of soda, and kept at hand ready for use in sealed glass tubes. A small portion is chosen sufficiently large to fill the extremity of the absorbed root, of circular shape, and sufficiently small, on pressure, to pass through the apical opening of the canal. This morsel is passed by the aid of a sound with a blunt end, is driven the whole length of the canal, and right through to its proper place in the part where the absorption has taken place. Roots grafted on the sponge in this way ought to be made antiseptic, and the canals must be closed immediately the sponge is passed.

The Eruption of the Teeth.

BY T. E. CONSTANT, M.R.C.S., L.R.C.P., L.D.S. (SCARBOROUGH.)

No apology is needed for bringing before the Congress, among whose members are many eminent physiologists and dental surgeons, a theory of the eruption of the teeth, which, if not a final solution, may at least provide a working basis for the dentist. The process of the eruption of the teeth is of interest to both; to the physiologist it is fascinating inasmuch as it is a problem unsolved, and the dentist is brought face to face with it in every branch of his practice. In order to allow a just opinion to be formed of his theory, Mr. Constant first proposed to recall to the minds of his hearers the various theories which up to the present had been enunciated, together with the objections which had been urged against them, after which the naked eye anatomy of the erupting and developing teeth, and the parts immediately in contact with them, would be briefly described. In this way they could determine whether the theory was liable to the same objections as the others, and at the same time how far it agreed with anatomical facts—which latter had been ignored by previous writers.

One of the oldest theories was that which attributed eruption to elongation of the roots. In 1835 Thomas Bell said that as ossification proceeded the roots of the teeth continued to elongate, until first the incisors, and afterwards the others could be held no longer in the alveoli. Against this theory, which is still popular, Mr. Constant quoted the following unanswerable objections: The distance travelled by the crown is sometimes longer than the length of the root; teeth with small roots will erupt while others with longer and fully formed roots do not; teeth with roots fully formed may remain unerupted for a long time and then they will erupt. Dr. Peirce, an American writer, was quoted in connection with this theory, and the explanation suggested by Tomes mentioned. Delabarre's theory was also given. He believed that the issue of the tooth from its crypt is similar to that of the child from the uterus. In his opinion the sac, attached above to the gum and below to the neck of the tooth, is the chief factor in the process, and by its contractions it raises the tooth to the gum and forces it through. Coleman's theory of bone currents was also mentioned and refuted, as were those which attributed the eruption of the teeth to deposits of bone at the bottom of the crypt, and that depending on alveolar contractions.

Mr. Constant then described the state and position of the teeth in the jaws of a fully-developed fœtus. The partially calcified cusps of the temporary teeth are embedded in soft gelatinous material which is enclosed in bony cusps. The calcified portion of the developing teeth are at no point in contact with the walls of the crypts, but the gelatinous material everywhere supervenes. As the calcification proceeds the cusps approach the walls of the crypts, which are not enlarged. When the crowns are fully calcified the walls of the crypts have been partly absorbed, and the bone covering the cusps of the molars and the labial aspect of the incisors removed. But even then there is no actual contact of the crowns with the remaining walls of the crypts, and between the bases of the crowns and the floors of the crypts there is always an appreciable division of soft vascular tissue extending between the sides of the crowns and the walls of the crypts. Henceforward both root formation and elevation of the crown takes place at the same time, and the wall of the crypt becomes the socket of the root with the same vascular tissue between. After the eruption of the crown from the gum this tissue loses its gelatinous character, becoming tougher, and more adherent to the root and alveolar wall, except between the base of the root and the alveolar floor, where it is still gelatinous, and after the complete formation of the root this gelatinous substance forms the peridental membrane. The eruption of the permanent teeth in all essentials resembles that of the temporary ones; and the process of absorption which helps in the removal of the temporary teeth is probably the same as that which removes part of the crypt wall in the elevation of the crowns of temporary teeth. Dissections of the jaws of the lamb and pig show that a similar process goes on in them.

Having remarked on the similarity between the process of dental eruption in certain animals and the same process in men, and exhibited diagrams bearing on the question, Mr. Constant came to the important question—If these theories of expansion, contraction and elongation are untenable, what pressure is it then that is exerted on the roots? As the root in formation is never in contact with the surrounding bone it must be necessarily the vascular tissue in which it is embedded. The *post mortem* appearance of this tissue presents a consistency too jelly-like to offer any effective power, and yet, he argues, resistance there must be, or it would be obliterated, and he is forced to fall back upon blood pressure. Then if the physiological process of dentition exercises independent mechanical force, and is an agent in the causation of the eruption, it must, since action and reaction are equal and opposite, share this influence with the blood pressure, a factor which hitherto has not been reckoned with. It is obvious that a powerful force must be exercised through the vascular tissue in which the root is surrounded. Having decided that the blood pressure acts as this erupting force, the question arises—Is any auxiliary force necessary to act with the blood pressure, or is the latter sufficient in itself?

The author goes into the consideration of this question and illustrated his reasoning by diagrams. The conclusion he felt justified in arriving at was that "the blood pressure exerted in the vascular tissue which lies between a developing tooth and its bony surroundings is the active mechanical force in the process known as eruption of the teeth." Mr. Constant's theory may be tersely summed up in the following propositions: (1) The active mechanical factor in the cutting of teeth is the pressure of the blood. (2) The fact that the pressure of the blood can act as a mechanical means on the cutting of the teeth is principally due to the particular arrangement of the bony parts which form the crypt of the teeth. (3) This peculiar arrangement of bony parts is due to the pulps of the emerging teeth which exercise atrophic influence on the alveolar processes which are developing, and it is maintained by these pulps. (4) As a consequence of the proceeding, the cutting of each tooth is to a certain degree automatic.

(To be continued.)

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

INLAYS, THEIR ADVANTAGES AND LIMITATIONS.*

BY C. N. JOHNSON, L. D. S., D. D. S., CHICAGO, ILL.

Unfortunately for us and for our patients, we are not yet able with our present facilities to uniformly combine esthetic effects with utility.

There are certain cases where, by the judicious use of inlay work, ideal results may be attained, but there are a vast number of others where the conditions are such that inlays cannot by any possible means be made artistic and permanent. In alluding to the artistic features of inlay work reference is of course made to porcelain inlays, and it is doubtless true that a properly constructed porcelain inlay is more artistic in appearance than any other kind of filling-material. But when this is said, almost all is said that may be in recommendation of this kind of work. The simple fact is that in the very cases where the greatest need is manifest to avoid conspicuous operations porcelain fails in other important requisites to a degree which renders its use almost prohibitory.

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*Extracts from article in Dental Cosmos.

For instance, in a long, thin, translucent central or lateral incisor with an approximal cavity which involves the incisal angle we have a type of case which calls not only for harmony of color, but for some material which possesses great strength in a given bulk. It is here, if in any place, that appearance is important, and in no less a degree is it necessary to reproduce the lost angle with a substance which is capable of withstanding attrition and not suffer displacement or fracture. Porcelain, when carried out into thin edges, such as are sometimes called for in these cases, has not the requisite strength or toughness to do extended service in the majority of mouths. It will not do to point to a few isolated instances where porcelain has proved satisfactory in such cases, and argue therefrom that it is always to be depended upon. In some mouths the volume of usage on a given tooth is very small, and any kind of a filling-material will do service, but these are·the exceptions.

It must be acknowledged that a perfectly condensed gold filling is infinitely tougher and less friable than porcelain, yet even the best inserted gold fillings are sometimes inadequate to the strain. * * * Even in those instances where a perfect alignment and perfect form can be given the inlay, the lack of strength at the point where the approximal portion joins the incisal portion is always an element of weakness. The filling-material must be especially tough at this point to prevent breakage, and, as has already been intimated, porcelain is too fraible to be subjected to this kind of stress.

Another important factor in these cases is the protection of thin enamel. With gold—or better yet, with platinum and gold—a wall of enamel may be adequately protected by building the filling over it to the thickness of one-half a millimeter, while porcelain, to afford any protection whatever, must be laid on in appreciable bulk. At best, porcelain must be considered a poor protection to thin enamel-walls, even where it can be successfully built over them.

It will thus be seen that in many of these very conspicuous cases the indications are almost wholly against porcelain inlay work, so far at least as permanence of result is concerned, and in passing it may be well to call attention once more to the possibilities of platinum and gold in this particular class of cases. * * *

And yet, as has been stated, there is no metal filling which can quite take the place of porcelain in appearance, and it should be our aim to study the possibilities of porcelain and adapt it to those cases where the indications are favorable to its use.

Such cases are represented by all cavities which are not exposed to attrition, but which are freely exposed to view. Those with a broad opening to the labial—particularly those occurring in the gingival third of the labial surface—may be accounted typical cavities for porcelain inlays. It is here that artistic and serviceable work may be accomplished, provided the operator attains a mastery of shades. This question of shading becomes a matter of very great importance in its relation to artistic results, and this, if there were no other reason, should determine the selection of bodies for such work which fuse at a temperature sufficiently high to assure permanence of color. The bodies which are capable of being fused on gold cannot be relied on to permanently maintain their color in the mouth, nor are they so strong in a given bulk as the higher-fusing bodies. If porcelain inlays are indicated at all, the very best and strongest and densest porcelain is none too good for the purpose. The present clamor for short-cut methods in this kind of work is calculated to lead to such imperfections as will eventually bring the work into disrepute, and throw doubt on an otherwise legitimate line of practice.

The indications for inlay work, aside from esthetic considerations—viz., the undue tax on the patient in the insertion of large foil fillings—apply particularly to molars and bicuspids. It is here that inlays really may be made to answer the most useful service. In cases where an appreciable portion of the crown is gone inlays of gold may often be inserted to good advantage, and thus save the patient the tedium of a protracted filling-operation. These inlays of gold may be used in very many cases where operators have been in the habit of crowning teeth. It is often a nice point to decide where fillings shall stop and crown-work begin, but if the operator has a true conception of the possibilities of gold inlays he may frequently save himself any doubt in the matter by employing this ready method of closing the gap between filling and crowning. A tooth with any appreciable portion of the crown missing has in later years quite generally been consigned to excision of the remaining portion for the purpose of inserting an artificial crown, quite irrespective of the condition of the part still standing. This is hardly living up to the highest possibilities of dentistry, because the history of crowns in the years to come will go to prove that the best interests of the patient will be conserved by deferring crown-work as long as possible. The serviceability of many a tooth may be prolonged for years by the judicious employment of inlays in those cases where there has been so great a loss of tooth-tissue as to make the insertion of a filling injudicious. The tenure of service of the inlay may be logically added to the ultimate life of the tooth, from the fact that when the inlay fails the tooth may then be crowned with as great a promise of future usefulness as if it had been crowned at the outset. In pursuance of our work upon the natural teeth we should have in mind not only the comfort of the patient at the moment, but the greatest ultimate length of service that we can secure for the organs operated on. * * *

But as to the relative merits of fillings and inlays in general, it may be stated that in the vast majority of cavities presented for our treatment fillings are infinitely more serviceable than inlays. The requisites for inlay work are in many respects so arbitrary as to prevent the possibility of its being at all universally applicable. A cavity must be cut in such a way that the orifice is more widely extended than the interior, and in many instances this involves the breaking down of strong walls which with ordinary filling-operations might be allowed to remain. For instance, in an approximo-occlusal cavity in a bicuspid where the decay has extended well around to the buccal and lingual surface at the gum-margin, but where the walls of the cavity are strong and well supported near the occlusal region, it would be a very radical procedure to cut away the buccal and lingual walls parallel with the decay in the gingival region, as would be necessary to properly fit an inlay.

It would not only be a tax on the patient, but would materially weaken the tooth. This is only one of the many cases where a perfectly fitted inlay would involve too serious a sacrifice of strong walls, and this may be said to apply as well to incisors as to bicuspids and molars.

There are numerous cavities which may be made to receive a foil filling without any exposure to view, but which if sufficiently opened out to receive an inlay would thereby be rendered conspicuous. In fact, in the majority of cavities which apply to us for treatment the insertion of an inlay involves the extension of the cavity outlines to a degree unnecessary in an ordinary filling; and while this extension is often a safeguard against a recurrence of decay in bringing the line between inlay and enamel to a point where it is readily kept clean, it sometimes leads to unnecessary exposure of the operation. No method of reproducing lost enamel can ever quite equal in appearance the natural tooth-structure, and the less conspicuous our operations are made the nearer we are likely to approach artistic perfection in our work.

One other factor in connection with inlay work relates to the greater expenditure of time necessary where inlays are used than when ordinary fillings are inserted. It is true that the element of time is a minor matter when considering the accomplishment of the highest class of service to our patients, and yet in the daily routine of office practice time becomes important. With a cavity of average size it is conservative to state that a gold filling may be inserted in one-half the time required for an inlay, and the resultant operation will at least prove equally permanent, so that this feature of the case cannot well be ignored.

It may therefore be said in conclusion that the legitimate use of inlays is quite narrowly restricted to those exposed surfaces where artistic effects are very important, and to the cases where the tooth-tissue is so extensively broken down as to make the insertion of a foil filling too great a tax on the patient. To employ inlays outside of these indications is either to misconstrue their true function, or to let enthusiasm overbalance judgment.

TREATMENT OF EROSION.*

BY J. ROYSTON, L. D. S. ENG.

The treatment of erosion is unsatisfactory. In the early stages the use of an alkaline mouth wash should be advised, as also the local application of spirits of wine and spirits of ammonia. A soft tooth brush should be used and tooth powder discontinued, an antiseptic solution being used instead. The reason for discontinuing the tooth powder is that, being composed of powder, it might assist in the progress of the disease. If the eroded spots are painful, they may be touched with phosphoirc acid, chloride of zinc, or, if in a place which does not show, nitrate of silver may be used, or a paint may be prescribed, the patient being instructed to dry the tooth and paint on the solution, keeping the tooth dry to allow the material to harden. The following will be found useful:

℞. Gum-mastich (powder),	dr. 1
Chloroformi,	oz. ½
Zinci chloridi,	drops 5

Misce—To be used as a paint.

When the erosion is more advanced, the cavity should be shaped and the filling inserted, preference in the front of the mouth being given to gold.

A NEW CROWN.†

BY J. MOUNTFORD, L. D. S., ENG.

This demonstration was interesting to many on account of certain novel features in the crown itself, and also by reason of an entirely new method used in adapting it to the root to be crowned.

The crown—an all-porcelain one—is perforated from base to occlusal surface. It is made in the methods adopted by the best English manufacturers, and is consequently close-bodied, strong and capable of being cut and polished. Its distinctive features are:

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*Extract from article in Dental Record.

†From Journal British Dental Association.

(1) Increased size of perforation on its basal or root surface, thus allowing more latitude for the pin placed in the root canal, and so obviating the necessity of enlarging the opening in the crown when the canal is not in the centre of the root, as is almost always the case in first upper bicuspids.

(2) The perforation on the occlusal surface is much larger than that found in other porcelain crowns, and is elliptical in shape instead of circular. This allows of an easier adjustment of the nut of the How screw post, or, as the demonstrator prefers, the bending of the post—hard platinum wire pin size—to almost a right angle.

(3) The natural teeth are more closely copied in general outline and size than in any other porcelain crown the demonstrator is familiar with.

These crowns may be used either with or without a collar cap. The method shown in the demonstration was to obtain an accurate impression of the root face by lightly burnishing gold foil on the root, using this as a matrix in which porcelain was fused, and so obtaining an exact copy of the root face in porcelain; at the same time fusing the pin and the crown together. In this way a perfect fit to the root is obtained.

The method of procedure was as follows: The root, an upper first bicuspid, was cut down not quite to the gum line, except on its labial aspect, where it was cut level with the gum. A large round bur was then used to make the root face slightly concave, the reason for this being that it allowed of a greater depth of porcelain at the part of greatest strain, namely, along the shortest diameter of the crown, where the pin enters. One post only was used. This was placed in the enlarged labial canal. The next step was to take the "bite." The end of the post which was to be put in the crown was bent at almost a right angle. The post was now placed in the canal and the patient asked to shut his teeth together, when it was found that the bite was just free of the post. Any peculiarity of the bite was carefully noted at this stage. The next step was taking the impression, the material used being Gilbert's gutta-percha. In the first place a piece of gold foil, No. 30, somewhat larger than the face of the root to be crowned, was lightly burnished with a piece of amadou on the root; then the post, having previously had a small piece of softened gutta-percha attached to its bent end, was passed through the foil into the canal, and the small piece of gutta-percha was packed around the post to fix it in its proper position. This being done, the gold foil was gently rubbed with amadou, held by dressing forceps, until the outline of the root was distinctly visible, when the process of taking the impression was completed by pressing, with finger and thumb of right hand, gutta-percha into the space, half of each of the adjacent teeth being included in the impression. After removing the impression from the mouth the four angles of the foil were gently lifted from it in order that they might be held securely in the model; this was done in order to prevent the foil curling up when the model was fired.

The model was run in a mixture of plaster of Paris and fine silica. The addition of silica somewhat retards its setting, but the demonstrator believes that a model made from this mixture does not contract at all when made red-hot in a furnace or in the cooling afterwards, nor is there any cracking.

Having removed the gutta-percha from the model a crown was selected; no attempt at fine fitting was made. A certain amount of grinding was necessary to shorten the tooth crown to adjust it to the length of the post because of the articulation. The model was then dried preparatory to firing. Three firings are always advisable and sometimes a fourth is necessary.

The porcelain body was mixed with water to the consistency of cream. A small quantity was placed in the concavity in the foil and then fired for about five minutes in a Mitchell electric furnace 110 volts; then the model was taken out of the furnace and allowed to cool. The spaces of contraction were filled with body and a layer of the same was placed on the basal surface of the crown, which was then put in position on the model; more body was added to fill about half the perforation in the crown. The surplus which oozed out between the crown and the gold foil when the former was placed on the model was trimmed away and the second firing as given. The final firing took place after filling the spaces of contraction with more body. In the last firing the demonstrator allowed the crown to cool in the furnace, as he considers a more perfectly vitrified surface results. Each firing took about five minutes, starting with the furnace cool. After the foil had been peeled away from the crown it was found to fit the root perfectly.

The demonstrator believes that if care is taken in mastering the details of this method a more accurately fitting and *stronger* crown for bicuspid roots can be made than in any other way at present known.

HAS NON-COHESIVE GOLD ANY CONSIDERABLE VALUE AS A FILLING MATERIAL?*

BY DR. J. A. WATLING, YPSILANTI, MICH.

Dr. Hoff has submitted one or two questions for me to comment upon.

Has non-cohesive gold any considerable value as a filling material?

In my opinion it has. In speaking of the non-cohesive gold in the sense that he mentions here to-night I do not know that I ever handled any; I do not know that I have ever used any gold which I could not render cohesive by annealing. I presume that it has been my fault, because I never bought it. I do not remember of ever using that kind of gold. I started in the profession something over forty years ago, and at that time cohesive gold was a new thing.

I really never learned the art of using gold except as cohesive gold with serrated pluggers. I can put in a small crown cavity at the present time with the old style of filling with sharp pluggers and strictly non-cohesive gold, but if it be a large cavity I know I could not fill it as I did years ago.

For many years in my practice I used nothing but the most strictly cohesive foil that was made, Watt's crystal gold foil. I do not know whether it is manufactured at the present time or not. It was the most cohesive of all gold preparations.

QUESTION: Did you say that it was a foil?

DR. WATLING: It was a foil.

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*From Dental Register.

The first piece of gold I put into a cavity I never anneal. It is practically non-cohesive gold, but I anneal each succeeding piece. The amount of annealing depends somewhat upon the manufacture of the gold. If I find that the gold tends to break in working I anneal it more and more as the filling progresses. I do not know that I can answer this question as to strictly non-cohesive gold, as I am not sufficiently acquainted with its use. To illustrate: My system in starting a filling, taking a large approximate filling in a bicuspid; I would commence at the cervical, the first piece of gold being sufficiently large to cover the bottom of the cavity, extending out over margin of cavity, quite freely, so the first piece extends out over the edge and fills that place where fillings so frequently fail, at the cervical border. I would rather that the first piece be just as soft and pliable as it is possible to have gold made, yet it must be in this condition so the next piece applied will cohere. It is not necessary to have this first piece condensed absolutely hard.

The old operators paid no attention to the cohesiveness of gold, and they made excellent fillings; their fillings were made simply on the principle of corking a cavity, and that is really the true idea. It would be very difficult to cork a beer bottle, so as to keep the gas from escaping, with a piece of hard wood; it must be a soft and yielding substance which will adapt itself to the opening. Just so with fillings—the softer the material used the better it will adapt itself to the walls of the cavity. I call this gold I use non-cohesive or soft gold. According to Dr. Hoff's statement, the annealing of the soft gold should render it more soft, but when it is annealed it becomes stiff, and when placed in the cavity it is not likely to slide upon itself in malleting.

Has the form in which the gold is used any particular advantage in itself which cannot be overcome by patience and acquired skill on the part of the operator? That is, cannot any form of gold be used by different operators and accomplish the same results?

I think that this question can be answered affirmatively. I think we use these different golds somewhat automatically, or as a matter of habit. The man who uses exclusively one kind of gold may make just as good a filling as another who uses an entirely different kind; one may use No. 60, another No. 4. A man may perhaps make just as good fillings by the use of sponge gold if he takes just as much or a little more care perhaps, as the one who depends upon foils. We listen to these men who are selling this sponge gold, and they tell us how much time they save, about one-half or three-fourths, and they take up large pieces and put in with large pluggers. Now, that is a great mistake, and that is the reason why we have epidemics of sponge gold for two or three years, and then it is dropped. It has been having a run within the past five years; men have been showing off their sponge gold, but I see they are not here at this meeting.

It requires just as much pains and care to make a good filling with sponge gold as with any other. There are millions of little infinitesimal particles to be welded together to make such fillings, while the foils, being already welded together, do not require as careful and slow manipulation.

A NEW CONE FOR ROOT CANAL FILLING.*

BY THEO. FRHR. VON BUEST, M. D., D. D. S., DRESDEN, GERMANY.

To the many methods of filling root canals now mentioned in our dental journals, I venture to add another one. It advances neither a departure from the methods, the materials nor from the preparatory treatment of root canals now in vogue, but distinguishes itself from all other fillings that have come to my notice, in that the canal is more easily and completely filled, and in that it is removable, a property which itself must make it invaluable to every dentist. I have had opportunities of testing this filling in every respect, and can say that it can be easily and completely removed the moment the contents of the pulp chamber are exposed to the reach of an excavator or pair of light pliers. It therefore also asserts itself as a practical test filling, and can be used in the antiseptic treatment of roots.

My method is this: I take fine silver wire of from 0.05 to 0.02 millimeter in diameter, and cut from the different thicknesses of wire lengths to correspond to the different sizes of root canals. These I roughen and surround with a film of gutta-percha, making the point cylindrical or cone-shaped, very like the root canal points bought at the depots. Then I turn a crook or hook at that end of the point which is to occupy the coronal portion of the pulp cavity. Thus we have an ordinary root canal point of gutta-percha with a core of wire and a hook at the larger end.

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*From Items of Interest.

This hook facilitates the removal of the filling, it being readily seen that the moment one can reach it with the pliers, the filling can be drawn bodily from the canal.

Removability has been the *bete noir* of most of our practitioners, and I trust that this little idea may prove of value to some of the gentlemen of the profession. It has, moveover, other advantages, in that the filling which can be made as fine as any practical gutta-percha point, has such strength that it will follow the root canal to the very end without turning at the point, as is the case with the gutta-percha points.

My method of filling is to introduce chloropercha into the root, and then insert the point with a pumping motion, so as to better force out all air that may be confined. The completed filling, it will thus be seen, has exactly the mechanical and therapeutic value of an ordinary gutta-percha filling with the additional advantages above named.

I am well aware that Dr. Morrison and Dr. Francis Peabody, of Louisvile, used metal points in connection with chloropercha, but the use of a ready-made gutta-percha point, with a core of wire as here explained is, as far as I know, new.

THE USE OF FLEXIBLE STRIPS.*

BY MARY E. BLAKE, D. D. S., SPRINGFIELD, MASS.

The writer has derived an immense amount of satisfaction from the use of flexible metal strips, as an adjunct to the insertion of cement fillings in the twelve anterior teeth, and each day is impressed with their value.

The usual soft, half-hearted, discouraged, easily-creased and twisted German silver strip of commerce is not meant, but one of steel, fine of temper, well planished, smooth of edge, and full of spirit and spring in length, stiff and rigid from side to side, as a whalebone is both flexible and rigid at the same time. Such strips can be procured and should be about two inches in length, one-quarter inch wide and No. 42 B. and S. gauge. These should be kept clean and bright; this point is of prime importance. Now, as to their use.

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*From article in Dental Brief.

Everything being ready, except the actual mixing of the cement, pass the strip between the teeth, letting the ends remain loose, or tucking them around adjacent teeth. Often I request my small people to hold them back, allowing them to watch the procedure in the glass side of my table. The filling material, rolled into a tiny cone, is inserted into the cavity with suitable instruments, pressed well against the strip until the desired amount is used. Then bend the strip around the tooth, again and again, drawing the cement into and not out of the cavity, form the contour carefully, pass up to the cervical margin, leaving it smooth and well shaped, then withdraw it, allowing the cement to harden thoroughly. The closest, most workmanlike proximal fillings can, in this manner, be well placed, correct contour secured, and the old-time laborious methods of finishing be obviated.

Space of a minimum amount and the passage of a thin strip has already been secured, with no danger of dislodgment of filling, and certainly no discomfort to patient—there remains but trifling work to trim down nicely with curved chisels and sharp scalers, disks and strips.

When the orifice to the cavity is deepest on the lingual surface hold the strip firmly on the labial side, press the cement into place from underneath, using a ball burnisher, securing concave form at once—indeed "the stitch in time saves nine," and advantage should be taken of every second of working time while the material remains plastic. Should it be necessary to insert the cement of rather soft consistency, it is well to oil the strip very slightly, or dust over it the powder of oxyphosphate mixture, while in case of gutta-percha fillings the strip may be slightly warmed, or not, as the operator likes best.

ESSENTIAL OILS.*

BY H. PRINZ, D. D. S., ST. LOUIS, MO.

Essential, etherial, volatile or distilled oils, as they are termed, are mostly derived by distillation from plants. Chiefly, the oils are found in the fruit, flowering part, or the bark of the plants. Occasionally the plant may produce two or even three different oils in its various parts (orange tree). They have a strong odor and taste, and are used to a large extent in perfumery and medicine as flavoring agents, while dentistry relies chiefly upon them for their antiseptic and obtundent qualities.

Essential oils do not belong to a definite chemical group. Most of them are composed of a mixture of two or more principles, one being a hydrocarbon, known as a terpene, and the other being an oxygenated body, such as an aldehyde, (oil of cassia) an acid, (oil of cloves) a phenol, (oil of thyme) an esther, (oil of wintergreen), etc. It is this oxygenated body upon which the value of the oil as an antiseptic or obtundent depends. The oils are usually slightly colored, yellowish, brown, red, green, etc., but this color, it is believed, is due to some small amount of vegetable matter present. Sometimes the stills or original containers of the oil imparts the color. The green color of the oil of cajuput may be traced to the copper stills or copper canisters.

Essential oils are easily vaporized and undergo some decomposition with age, by absorbing oxygen. They become darker in color and thick, depositing resinous precipitates. The oils are soluble in alcohol, ether, chloroform, fatty oils, etc. Agitated with water they form a milky mixture from which the oil will soon separate, imparting its odor and taste to the water.

In dentistry the essential oils are mostly employed as antiseptics, obtundents, solvents, etc. The most important use is as antiseptics. Their value as germicidal agents depends largely upon their volatility, which, according to Cushny, "enables them to penetrate readily into protoplasm and to lessen its vitality by acting as foreign bodies. In addition, they are nearly related to the benzol series, the members of which are all antiseptics and protoplasm poisons." No doubt, their toxic properties are due to the oxygenated body present. This fact is demonstrated by the action of the oil upon bacteria in culture medium. The more concentrated the oil, viz., the more active constituent present, the more rapid its action as an antiseptic.

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*Extract from article in Dental Register.

THE UNNECESSARY EXTRACTION OF THE DENTAL PULP THROUGH CATAPHORESIS.*

BY E. A. BOGUE, M. D., D. D. S., NEW YORK, N. Y.

Quite a number of practitioners have proved it possible, by taking plenty of time, to produce (as stated above) complete anæsthesia in the tooth. When this anæsthesia was produced they could, of course, cut where they pleased, and, as very few of our younger practitioners have had the time to carefully study the minute anatomy of a great many teeth, it is quite supposable that the little cornua of the dental pulp have been sometimes unintentionally cut into, at other times very nearly exposed, while the operator, as well as the patient, were in blissful, insensible ignorance of the fact. When sensibility again returns, that is to say if sensibility returns at all, the same conditions are found to exist as when we expose, or nearly expose, a living pulp that is not anæsthetized. Pain is experienced, slight alterations in temperature are keenly felt, throbbing and a sense of pressure are frequently complained of; and not seldom the symptoms of pulp-irritation, and then pulpitis, strangulation of the pulp, its death, its very slow decomposition; and months, or possibly a year or two afterward, the truth of this diagnosis is proven by an attack of pericementitis, followed by abscess. * * * *

Much is being written of late regarding the removal of pulps through cataphoresis without discriminating at all as to the teeth from which they are removable surgically, or by immediate instrumentation, which is a process that calls for careful consideration before it is employed. The English journals are already speaking of the danger line, and some of our more advanced American journals seem to be appreciating the fact that the galvanic current may, under certain conditions, do more harm than good. * * *

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*Extracts from article in Cosmos.

Within about a year a case has been brought to my notice in which an effort was made to releive pain in a nearly exposed pulp in a lower molar by removing it surgically by the aid of cataphoresis. An unmarried lady of good parentage, and no malign tendencies, had been for over twenty years in the hands of the same dentist. During that time she had never suffered from toothache. In the spring of 1898 a right lower molar was slightly broken, and the lady consulted a practitioner in a neighboring city, who, not recognizing the peculiarly delicate physique of the lady, repaired the break with a filling in the ordinary way. The operation itself was exceedingly painful, and the pain experienced during the return journey to New York was such that the lady telegraphed this gentleman, and he came several hours' journey to see her. He removed the filling at the lady's house, and, making an application of carbolic acid, instructed the patient to go to a colleague near by and have the cotton removed if the pain did not subside. As the pain continued during the next day, she went, and, being informed that the gentleman had dismissed a patient expressly to see her, she took his chair and was subjected to a cataphoric application of cocain to this lower molar. The pulp was rendered temporarily insensible, of course, and the practitioner undertook to remove it. So much as he could reach through the small openings that he made was probably removed, but when the effect of the cocain had passed it may readily be imagined that the remnants of torn and lacerated pulp gave no less pain than the exposed dentin had given, for the pulp had not been exposed at all until after the cataphoric application of cocain.

Upon applying to the same gentleman a second time for relief, another filling was removed from another adjoining lower molar. Cocain was driven into this tooth with the electric current, and an attempt was made to remove the pulp from this tooth also, which, of course, could not have been successful, as no instrument made by human hands can reach the entire canal of certain lower molar roots; nor can instruments reach the web-like portion of pulp-tissue that often in flat-rooted teeth spreads from one canal to the other, like the flattened web of a duck's foot.

Again, under the benumbing effect of the cocain, the patient returned home. When the action of the cocain had passed the pain that follows a lacerated pulp returned, and, of course, inflammation of that organ must have supervened.

At this stage the patient was taken to an oral surgeon, who made an eaxmination by transillumination, and *thought* he located a dark shadow in the antrum, which, accordingly, he opened through the nasal passage on that side, evacuating something more than half a teaspoonful of what appeared to be pus or muco-purulent matter, though no accurate knowledge can be had of the matter, as no careful examination was made of it. Under the influence of this fresh pain the patient tried to rest content for a few days, but the generally neurotic condition was such that she went once again to visit the oral surgeon, and this time a perfectly sound and healthful upper bicuspid was extracted and a fresh perforation was made into the antrum.

In view of the artificial opening which had been made through the nares and the necessary admission of foreign substances, which would naturally cause the formation of pus, there was evacuated this time considerable pus, and some care was taken and some pain given in thoroughly washing out the antrum and getting it once more into an aseptic condition.

The pain still continued, and the next move was an opening (the father says) into the submaxillary gland, but at any rate down to the carotid artery, evacuating a small quantity of blood from beneath the surrounding fascia, for interference with the circulation in a painful region has been known to relieve or prevent pain in the affected part. Trousseau, of France, and Nussbaum, of Germany, have ligated arteries, successfully controlling pain by the process. In this case the pain seemed to subside for several days; not disappearing entirely, but being less severe. The subsidence was not for long, however, for very soon these two lower molar teeth began to be so very painful that, worn out by this long suffering, which had caused the loss of fourteen pounds in weight, the lady consented to the extraction of one of the lower molars, not the one from which the first pulp was supposed to have been removed, however. The operation was successfully performed, but little, if any, relief from pain was experienced.

Two other professional gentlemen were now consulted; the one an electrical specialist giving his attention largely to cataphoresis, the other a dentist giving some attention to oral surgery, and the treatment was to remove the pulp, or as much of it as possible, from the upper first molar, cataphoresis again being resorted to for this purpose. The pain still continuing below, an application of cocain every forty-eight hours, or thereabouts, was adopted as a palliative, in hopes of procuring rest for the sufferer. (No one seems to have thought of removing the gutta-percha filling put in by the first dentist who undertook to remove the first pulp from the lower molar by cataphoric help.)

At this stage the one who had charge of the lady's teeth during twenty years was consulted, "being asked if he knew anything about nerves independently of teeth," but he declined to hazard an opinion under the then existing conditions, not feeling himself competent to advise where so many others had failed to give relief, especially as it seemed evident that surgical interference would become necessary. At this time the pain was so intense that the screams of the patient at night were uncontrollable, and the constant continuance of the pain seemed to call for a surgical operation. Accordingly, a few days thereafter the jaw was opened externally and the inferior dental nerve was divided, and I am informed a portion was exsected.

After the wound of this last serious operation was well healed attention was again called to the immediate seat of the first difficulty—namely, the right second lower molar, upon which the cataphoric current had first been directed, and from which the pulp was supposed to have been taken painlessly. A dentist in the country was requested to examine the case. His first step was to remove the gutta-percha filling inserted by the one who was said to have removed the pulp nearly five months previously. A little probing with so-called nerve instruments revealed the presence of living pulp in this tooth, which in turn was extracted. This tooth has been in my possession for a number of weeks. The drill hole into the posterior root is round and scarcely larger than the orifice of *one* of the canals that it was desired to clear out. The anterior root had been cut off before I saw the tooth. When I first saw it the pulp was still in it. This was several months after the beginning of the trouble, and during all that time this lacerated pulp continued living, and continued to behave like an exposed pulp, until it was discovered by the country practitioner who removed the tooth.*

The points to which I especially wish to call your attention are, first, that complete insensibility of the dentin in the small operations that we are called upon day by day to perform is not desirable. Unless a man is far more expert in minute dental anatomy than the majority of practitioners can be, he needs the guidance given him by a slight sensibility when he is excavating. All the obtunding that is required can generally be procured by the use of pure carbolic acid and cocain, followed by a crystal of zinc chlorid, if that can be allowed to remain ten minutes. For all ordinary cases cocain or eucain beta in ether, as it is now furnished, or pure carbolic acid, will be found amply sufficient.

Again, we are not authorized needlessly to destroy, and the destruction of a pulp or the extraction of a tooth needlessly is an acknowledgment *per se* of our inability to save; and unless the good to be obtained by either of these destructive processes, or any other, for that matter, is far greater than the loss to which the patient is to be subjected, we have no right to do either.

If a pulp is to be destroyed, it becomes us as intelligent and consistent dental practitioners to remember the anatomical construction of the roots of teeth in which these pulps reside. No man has ever cut open a large number of human teeth without being struck by the fact that there are great numbers of little canals occupied by the pulp into which no instrument can possibly penetrate. It is a perfectly easy matter to remove the pulp from any of the six front teeth surgically, and generally from the palatine roots of upper molars and from certain roots of lower molars and upper bicuspids. From all the others it is a decided question before beginning whether they can be reached at all, and if any one undertakes to drill these roots, and so enlarge them, he is pretty sure to cause the loss of the tooth so drilled. It may be regarded, therefore, as generally impracticable to attempt to *surgically* remove the entire living pulp from any save the six front teeth, for, although it may at times be done in other teeth, we cannot be sure of our operation. If it becomes necessary to extirpate pulps posterior to these six front teeth, arsenic should be applied, and allowed to remain several days. Unless there is special reason for haste, it should then be removed, and an application should be made of some antiseptic of sufficient power to harden the pulp, so that when the processes of separation between the dead and living shall have taken place at the end of the eighth or tenth day from the first application, this hardened pulp may be *removed* in one mass from the tooth in which the arsenic has been placed. If this be followed by an antiseptic dressing and a filling, whether of oxychlorid of zinc or of gutta-percha, or of paraffin, we need expect no further trouble from teeth so treated.* * *

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*Since writing the above I have been consulted by Baron R., who presented a right lower molar from which he told me the pulp had been taken a year before. I found living pulp in both roots, perhaps half-way down from the cavity of decay toward the apices.

If a dental pulp must be destroyed, the safest and surest way to accomplish its destruction in the molar and bicuspid teeth without ulterior consequences is *not* through cataphoresis.

Neither is it through the use of arsenious acid applied one day and removed the next, but by leaving it in place until the slough has taken place between the dead and the living portion, when the pulp will have no further attachment to the tooth, and can be more perfectly removed than by any other means yet known. The impropriety of relying upon mummification without removal of the pulp it would hardly seem necessary to refer to, and yet men who have gained some reputation as expert manipulators, rather than as learned physiologists or pathologists, have advocated this process almost with each succeeding generation of dentists, just as they have advocated cobalt for the destruction of the pulp while dercying arsenic, seemingly not aware that arsenic is found in cobalt, and is the active element in the destruction of every pulp destroyed by the use of cobalt.

Finally, all needed anesthetic effects for ordinary operations on the teeth can more quickly be procured by other processes than by cataphoresis, and unless we are very sure of our minute anatomical knowledge, cataphoresis will rather hinder than help the *busy* operator.

AN IMPROVEMENT IN THE CONSTRUCTION OF A BANDED LOGAN CROWN.*

BY W. O. TALBOT, D. D. S., BILOXI, MISS.

I have just been trying something that occurred to me a few days ago, as new, in making a banded Logan crown. After fitting the gold cap on the end of the root, and grinding the crown up to fit with the V-shaped opening to the lingual side, there was still a concavity around the pin in the crown, which could not be perfectly filled with the metal fitted against the crown and would not do to leave, as in case there was not a perfectly water-tight fit after soldering there would be left a receptacle for secretions, which would give an odor to the breath. I knew cement would fill the cavity, but did not know how it would stand the heat in soldering. So I tested some of Ames's metalloid crown and bridge cement with a blow-pipe flame, and found that at first it expanded, became porous, and was easily broken. On increasing the heat to about the soldering point of 18 k. gold solder the cement flowed and contracted to about its original size, and became a solid mass that was glassy on the surface, very hard, and brittle.

The test seemed to indicate that it would serve my purpose. Mixing some cement to a creamy consistence, I filled the cavity in the crown around the pin just level with and extending slightly over the ground surface. Then a thin piece of platinum, in which a hole had been made, was passed over the pin and up against the crown. The pin was then inserted into a cork up to and slightly imbedding the crown, and held there firmly for a few moments until the cement had time to set and hold the platinum fast. The overhanging edges of the platinum were left so as to be caught in the investment.

Hard wax was placed over the platinum around the pin, warmed, and pushed into position on the cap and root. When the wax was hard, the crown and cap were removed, invested, and soldered as usual.

In soldering, the platinum held its place, and when completed there was a perfect joint. The advantages in this method seem to be: 1. The ease and rapidity of fitting the platinum to the crown. 2. The certainty of its remaining in position while soldering. 3. The certainty of filling the cavity around the pin. 4. Making the most perfect joint between the metal and the crown.

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*From Cosmos.

PORCELAIN CROWNS.*

BY F. J. CAPON, TORONTO, CANADA.

Porcelain comes to the rescue as an ideal method of replacement of the lost crowns of teeth in conspicuous places. It having the required strength, the operator can restore the desired effect according to his ability as an artist.

The advantage of porcelain crowns (made by an operator) over those of gold, or even those combined with gold and porcelain, is obvious. Take, for instance, the ordinary every-day post crown. After the face of the root has been trimmed to the proper shape, an iridium post is fitted into the enlarged canal, the depth of the canal marked on the post, and a disk of pure soft platinum, No. 35, slightly larger than the face of the root, is punched in the center, the post forced through to the mark, and soldered with pure gold. This is inserted into the root-canal, and the disk burnished and trimmed and burnished again, leaving a margin on the palatine half to form a band. Now, this absolutely fits the face of the root, which is next to an impossibility with a made-up porcelain crown, such as the Logan, etc. And I also claim that a porcelain crown made in this way has an advantage over similarly constructed crowns made with gold backing, in that one is able to more closely imitate nature in shade, position, and shape. How difficult to make a natural lapping incisor with a gold backing! Then, again, the shade is often disappointing, as the backing makes it a matter of speculation. But with a porcelain crown the shade can be changed by the aid of mineral paints and burnt in, thus bringing about an exact shade, sometimes impossible to get in a ready-made facing. Time is a consideration to most of us, as time saved is money to the dentist; and, after all, this is what we are after. So time is saved in making your own porcelain crown, as one can be made in less time than it takes to go down town to get one of the Logans.

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*Extract from article in Dental Cosmos.

I must speak for the strength of the porcelain crowns, as I think it is an erroneous impression that they are delicate and need protection. I have watched them take the strain of mastication for many years. It seems to me they are stronger than the porcelain facing with gold backing. In the one case the facing is etched to the solid porcelain body of the tooth, practically making the facing and body one; whereas in the other the facing is relying on two little pins, which in soldering are very frequently invisibly checked around their heads, and are liable to be easily forced off if not protected by unsightly gold tips, which are by no means artistic.

Perhaps one of the most satisfactory porcelain crowns is that we call the "jacket" crown. It is especially adapted to broken-down incisors and bicuspids where the pulp is intact, and most especially in covering the "peg-shaped" laterals. These "jackets" have proved to be very durable crowns, and have the advantage of enabling one in case of death of the pulp to enter the pulp-chamber without removing or injuring the crown. The record of this crown has, in the past twelve years of my practice, won for it a place that no other single crown can occupy. It has come to my rescue in roots fractured far under the gum (broken by hockey, lacrosse, and foot-ball); roots badly decayed and under the gum, and most particularly has it been my friend in the wholesale crowning of teeth where it is necessary for the salvation of the pulps. The samples I have passed around will show this form of crown. I will not burden you with the technique of this crown, as it has been in print many times.

DEVICE FOR RETRACTING SINGLE TEETH.*

BY HENRY KNOWLES, D. D. S., WASHINGTON, D. C.

I wish to call attention to a very simple appliance that was used recently to retract a superior right central.

The appliance consisted of a strip of German silver of about twenty-seven gauge and an eighth of an inch in width. The central portion was made to pass over the labial surface of the malposed tooth, the ends resting against the palatine surfaces of the adjoining central and lateral. The right central was not only drawn into position, but space was at the same time provided for its accommodation. As the space between the left central and right lateral was increased, a new turn was given the strip so as to exert more pressure. However, new strips can be cut and shaped almost as quickly as the old one can be altered.

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*From Items of Interest.

I have found this little device gives more satisfactory results than some of the complicated appliances, and it can be made in a moment.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

Contact Point Important.—Of all the mistakes made in judgment on operative procedures I know of none that jeopardizes the comfort of the patient as does that of negligence in looking after the contact point.—*D. M. Cattell, in Review.*

Pulp Devitalizing Mixture.—My method has been to make a paste of arsenic, morphia, and menthol, which is sealed into the cavity with cement to prevent leakage. I find this effective, and have never seen ill effects from discoloration.—*Dr. Adams, International.*

To Make Plaster more Agreeable for Patients.—Several drops of oil of wintergreen added to dental plaster makes it more pleasant for impressions. In preparing it drop several drops on about six quarts of dental plaster, work it well and sift it into the can.—*Jacob Senty, in Dental Century.*

To Mark Exactly on a Denture the Spot Corresponding to a Wound of the Mucous Membrane.—Cut a disk of suitable size from paper gummed on one side, and place it carefully over the ulcerated spot, gummed side up. Moisten the denture and place in position with light pressure. Remove carefully and the disk will be found adherent upon the point wounding the membrane, which can then be relieved.—*Revue de Stomatologie.*

THE BEST PORCELAIN CROWNS.—During the past ten or twelve years there has been, with almost every appearance of the monthly dental journals, some announcement of a new method of crowning natural roots or some modification of an old method. I have experimented with nearly all of these methods which contained any element of novelty, and I have reached the conclusion that the modification of the Richmond crown known as the "collar" crown, for the six anterior teeth, and a modification of the Bonwill crown for bicuspids and molars, contain all that is best in the methods for restoring broken and decayed natural teeth.—*J. Leon Williams, in Cosmos.*

FORMULA FOR GOLD SOLDER.— Dr. Robert Wakefield, of New York City, sends us a formula for gold solder, of which he says: "As a gold solder, I have been using the following for a number of years and it gives perfect satisfaction. The following formula gives a solder of great strength, but it requires some skill to handle it properly. Make an alloy as follows:

4 parts silver C. P.
2 parts copper C. P.
1 1-6 parts zinc C. P.

To make the solder, add one part of the alloy and three parts of coin gold.—*Items.*

THE OPERATING STOOL.—For all operations upon the teeth, except the introduction of filling material, I use the ball and socket stool of Ransom & Randolph make. This stool yields to every movement of the body, in any direction, a feature which I find very advantageous. While filling a cavity I use an ordinary revolving desk-stool, with rim for foot support. The preparation of a cavity requires many movements and changes of position, while no great amount of force is to be used. For inserting the filling we need a firm, steady position. Hence the advantage of the different stools.—*Howard T. Stewart, Mississippi Dental Association, 1900.*

TREATMENT OF FETOR OF THE MOUTH.—I wish to speak of two different systems that I have followed very carefully and partly successfully. These are the medicinal treatment with permanganate of potassium and the mechanical with the tooth-brush. I have found that thorough scraping of the furred tongue and the mucous surfaces has resulted in great improvement, not only in the case of my patients, but with myself, by the removal of collections of dead epithelial tissue and substances that have been retained about the fauces. In every case where I find fetor I invariably prescribe it, together with the use of permanganate of potassium in dilute solution.—*Dr. Cupid in International.*

The Dentist Should be Systematic.—I think there is a lack on the part of dentists, as a rule, to have a system for their work, and it amounts to a great deal. I have been asking the question quite frequently lately of dentists, "How do you examine teeth?" and I find that there are very few that have a system of any kind. It is just as necessary that we should examine teeth closely for decay as that the work be well done after the defects are found. Now, the system that I have for this work—and I imagine a good many others have a similar system—is to commence at a definite point on the jaw and go in a definite way around it, first on the lower, then on the upper. We also should have a definite system for all kinds of work. In the preparation of cavities we should know what should be done, then go about it in a systematic way, completing the first step before commencing the next. By this means we do the work with much less inconvenience to the patient, less fatigue for ourselves, and when the operation is completed it is of a higher grade than if done in a less systematic manner.—*T. L. Gilmer, in Dental Review.*

The Care of Gold Foil.—In the care of gold from the time of purchase to placing in the cavity, there are two points of great importance to be observed—the atmosphere in which the gold is kept, and its annealing when the cohesive properties are desired. Gold is capable of attracting or absorbing to its surface many gases, the condensation of which on its surface destroys its cohesive or welding properties. Some of these gases are easily volatilized and others not so. The usual form of the condensation is in combination in the form of a salt—hence, if we can control the character of the salt formation, allowing a volatilizable one, it can easily be displaced by annealing. Such control we have by placing our gold in an atmosphere of ammonia, the resulting salt formation of the surface of the gold being easily evaporated. In the annealing two things are accomplished. All gases or resulting salts and other impurities are dispelled or burned off and the mass of the gold softened. The different pieces of gold are then capable of being welded together and are soft enough that the malleability may be taken advantage of in *spreading* the gold, thereby forcing it to adaptation against the cavity walls. We are told by the metallurgists and chemists that gold is one of the most malleable metals we have. Advantage can be taken of this property in the insertion of fillings by the use of convex faced pluggers. It seems to me strange that so little advantage is taken of this way of spreading the pellets of gold as they are placed and welded to the already inserted mass.—*D. M. Cattell, in Dental Review.*

HINTS ON THE TREATMENT OF PYORRHEA ALVEOLARIS.—During the discussion which followed the reading of the paper the exquisite sensitiveness of the gums and teeth during the early development of pyorrhea and the consequent objection to scaling the teeth was referred to. Dr. Bogue's method of procedure in such cases is worth repeating. He makes a saturated aqueous solution of "iodide of potash and iodine crystals (equal parts). Also a saturated aqueous solution of sulphate of zinc. Equal parts of the supernatant fluid from each saturated solution are mixed together and the product applied to the sensitive surfaces. The operation of scaling is then proceeded with as usual." Washing out the pus pockets with warm water was unanimously endorsed, some even advocating the use of water only, after scaling the teeth and leaving nature to do the rest. The use of aromatic sulphuric acid as a solvent and stimulant in the treatment of pyorrhea alveolaris was disapproved by E. S. Talbot. Peroxide of hydrogen was lauded as the best wash for pus pockets. Talbot's and other scalers with the draw cut were preferred in cleaning the teeth but the operator should use the instruments adapted to his methods of working and individual peculiarities. Absolute cleanliness of the mouth was of course regarded as imperative after treatment. After the removal of the local causes useful adjuncts in the treatment of interstitial gingivitis, are tooth powders, mouth washes and the toothpick. The dentifrice which received the unqualified endorsement of the stomatologists is composed of seventy-five parts of finely powdered rice and cornmeal, eighteen parts of biborate of soda and seven parts of chlorate of potash, also saccharine, the proportion of which was not specified. The use of medicated liquid wash was recommended by some and condemned by others, but no recipe was given. The usual objections were urged agianst the use of the wooden toothpick in dislodging particles from between the teeth and preference was given to the use of the quill toothpick.—*Items of Interest.*

SOCIETY.

PARTIAL PROGRAM OF OHIO STATE DENTAL SOCIETY MEETING TO BE HELD IN COLUMBUS, OHIO, DECEMBER 4, 5, 6, 1900.

ESSAYS.

L. L. Barber—President's Address.
J. S. Cassidy—Chemical Aspect of Neurosis.
W. H. Whitslar—Neuro Pathology.
H. C. Brown—Dental Aspect of Epilepsy.
M. H. Fletcher, L. E. Custer, } Symposium. (Evening.)
C. N. JOHNSON, of Chicago—Paper and Demonstration of Gold Filling in Mesio-Occlusal Surfaces of Superior Molars.
Grant Mollyneaux—Report of Case.
C. M. Wright—Expansion for Protection.
G. H. Wilson—Prosthetic Dentistry.

CLINICS.

J. B. Beauman—Gold Filling with Smooth Pluggers.
L. T. Canfield—Gold Filling with New Pneumatic Plugger.
W. H. Hague—Gold Filling with De Trey Gold.
G. S. Junkerman—Soft Foil Contour Filling.
W. O. Hulick—Bridges for Converging Teeth.
W. H. Gensley—A Banded Logan Crown.

J. K. Smith—New Method of Making Dummies for Bridge-work.
J. R. Callahan—Gold Filling by Model.
S. M. Weaver—Surgical Orthodontia.
William Knight, }
H. C. Matlack, } Anesthetic Clinic.
C. A. Porter, }
E. L. Patchen—New Method of Shaping Plates to Dies.
W. H. Spaulding—A New Plate Graver, etc.
J. C. Waldron—Operator's Assistant, etc.

Other material will be added to the regular program.

HENRY BARNES,
Chairman Executive Committee.

This meeting promises to be an especially profitable one and we urge all dentists in the State to arrange to attend. Cross off the dates NOW from your appointment book. Remember, December 4, 5, 6, 1900.

THE TRI-STATE DENTAL MEETING.

The joint meeting under the auspices of the State Societies of Michigan, Ohio, and Indiana will occur at Indianapolis in June, 1901. The following is the general committee having the matter in charge:

For Indiana, George E. Hunt, chairman; Alexander Jameson, Harry C. Kahlo, Robert T. Oliver, John Q. Byram, all of Indianapolis.

For Michigan, J. Ward House, Grand Rapids, chairman; H. C. Raymond, Detroit; N. S. Hoff, Ann Arbor; J. L. Sweetnam, Manistee; E. A. Honey, Kalamazoo.

For Ohio, John R. Callahan, Cincinnati, chairman; L. P. Bethel, Kent; W. H. Todd, Columbus.

Ohio was a little stingy in appointing her committee, but the quality of it amply makes up for the smaller number. Indiana's committee is entirely composed of Indianapolis men, as the bulk of the work will have to be done here.

Indianapolis has been chosen as the place of meeting. The time has not yet been decided upon, but it will probably be the latter part of May or the early part of June. It is the desire of the committee to avoid all conventions or counter attractions in the city, that the entire attention of those in attendance may be given to the meeting. Sub-committees on hotels, meeting hall, privileges, program, railroads, amusements, etc., have been appointed and are now at work.

This meeting is one in which the whole State should be interested. It will, we believe, be the largest gathering of dentists that will occur in the United States during the year 1901.—*Indiana Dental Journal.*

OHIO STATE BOARD OF DENTAL EXAMINERS.

The next meeting of this Board will be held in Columbus, Ohio, beginning Tuesday, November 27th, 1900.

All those intending to take the examination should write for particulars and application blanks to the secretary, Dr. L. P. Bethel, Kent, Ohio.

NOTICE—NEW COLLEGES.

To Whom It May Interest:

At the annual meeting of the National Association of Dental Faculties, held at Niagara Falls, 1899, the following action was had:

Resolved, "That a commission, consisting of three persons, be appointed, whose duty it shall be to take cognizance of, investigate and advise with any parties contemplating the establishment of a new college or the re-organization of an old one."

In the performance of the duties of this commission it shall be competent to take into consideration the following points, viz:

All the circumstances that attach to it; the motive that prompts such an organization; the need for it; the proposed locality; the character and ability of those who propose to conduct it; the resources that may be available for its establishment, and any other points that have a bearing, for or against the establishment of a proposed college.

The attainment of full knowledge on these points would enable the commission to advise wisely.

Any party or parties having in contemplation the organization of a new dental college, or the re-organization of one already in existence, are requested to communicate with this commission for conference.

It shall be the duty of this commission to report to this body at each annual meeting, giving in detail such facts and conditions pertaining to the subject as the commission may find.

Commission:
J. Taft, Chairman, Cincinnati, O.
Geo. E. Hunt, Indianapolis, Ind.
Frank Holland, Atlanta, Ga.

TOLEDO DENTAL SOCIETY.

At the annual meeting of the Toledo Dental Society, held Friday evening, October 19th, 1900, the following officers for the ensuing year were elected: President, L. T. Canfield; Vice-President, W. S. Graves; Secretary and Treasurer, A. J. Wolfert.

OUR AFTERMATH.

PERSONAL AND MISCELLANY.

New Editor.—Dr. T. P. Hinman, Atlanta, Ga., succeeds Dr. H. H. Johnson as editor of *The Dental World*.

Withdrawn from the Pittsburg Dental College.—Dr. J. G. Templeton has withdrawn from the Pittsburg Dental College, of which he was dean and professor of pathology and materia medica.

Origin of Cadaver.—Hoveloch, a celebrated French author, in his "Science of Language," gives us the origin of the word "cadaver," so common to all medical students, in the following manner: It is derived from three words, *ca-io, da-ta, vermibus,* meaning "a body given to worms."

Beware of Procrastination.—Last week a delinquent subscriber said he would pay up if he lived. He died. Another said, "I will see you tomorrow." He's blind. Still another said, "I'll pay you this week or go to the devil." He's gone. There are hundreds who ought to take warning of these procrastinators and pay up now.—*Finley (N. D.) Slope.*

Honorable Mention of a Dentist's Invention.—Dr. David Genese, Baltimore, has received word from Paris that the official journal of the republic has announced his machine worthy of honorable mention in the United States Department of Liberal Arts and Chemical Industries. Dr. Genese's invention, which he took to Paris in April last, was a machine for the production of a fine grade of rice capsule, and attracted a great deal of attention.

Degrees in Dentistry.—The new University of Birmingham is the first university to institute degrees in dentistry, the "B. D. S.," and "M. D. S." Whether the new degrees will attract many candidates for higher honors than the L. D. S.—which will still of course constitute the qualifying and registrable diploma—remains to be seen. It will be interesting to learn what shape the examination takes, and whether surgery or science, odontology or mechanical skill is the predominant feature.—*British Journal.*

An Ancient Dentist's Bill.—The *Atlantic Monthly* contains the following exact copy, saving names, of a bill found among the papers of a venerable friend:

John Smith, Esq. To Charles Robinson, *Dr.*

May 26, 1826. To one piece of dental statuary, with six flukes and seven points, fitted nicely to the anterior inferior processes of the maxilla superior, and warranted three years (provided the dental Radices are capable of retaining the pivots) for twenty-one dollars.

An Earnest Appeal.—The following is from *Dental Clippings:* "The editor of this journal has just returned from the stricken city of Galveston. After having looked upon the many heaping masses of ruins, the hundreds of people with clothing all tattered and torn, eyes knocked out, ears torn off, legs and arms broken, and listened with tear-bedimmed eyes, to the stories of some who lost their loved ones, feels it a duty to call upon the dental colleges, dental manufacturers and dealers, and the dental profession throughout this country, FOR AID. There was never a time when some of our people needed financial assistance as they do in that city now. The dentists there have not suffered a great deal, only there will be no work, except urgent cases, for some time to come. The outstanding accounts will nearly all be lost. It is not these for whom we are especially asking aid—it is the poor people who are sick and in distress. All contributions, however small, will be gratefully received by Wm. H. Stuart, Houston, Texas, and turned over to the proper authorities, unless otherwise ordered, and duly credited with name and amount in the next issue of *Dental Clippings*. We hope all journals will copy this appeal and credit will also be given them. The list will be headed with a very liberal donation from

J. M. Ney & Co., Hartford, Conn.	$25.00

In Search of a Dentist.—Having to remain for a day in Liverpool waiting for the steamer to leave, I thought to call upon some of the dentists. Starting out at 8 o'clock to look around the city I first went through many business streets, and saw but one sign, but the surroundings were such I did not venture in. Then I tramped through many residence or mixed residence and business streets and still without success. I went into a drug store and inquired. The proprietor said there was one near by, but I failed to find him. After walking a considerable distance and seeing no evidence of a dentist but a shop window filled with specimens and prices ranging from two shillings (25 cents) and upward per tooth, I again called upon a druggist in a good residence loclity. He said he "pulled teeth." Told him I wanted to find a *dentist*. He said he knew of none anywhere within two miles. Went back to a business section where I had not been, and again called upon a druggist. He said on a certain street I would find several. I did so, found four offices, but the dentists had not yet come, as it was not time for them, and yet it was 10 o'clock. At last I found one in. He came forward and I handed him my card. He looked at it and said, "Well, what do you want?" I replied that I simply was making a friendly call. "Well, will you tell me just what you want of me?" I replied, "Nothing, but had *expected* to meet a gentleman," and left. This was my experience in a city of 800,000 population. I wondered whether here was not a good opening for some of the surplus dentists of America now so rapidly accumulating.—*L. P. Haskell, in Review.*

DENTISTS AFFECTED BY GALVESTON STORM.—Dr. Arnold, Galveston, had no lives lost in his immediate family and no damage to his office, but his home and furnishings were damaged to the amount of $2,000. Dr. Bell, Galveston, had considerable loss to his instruments and office furniture, by the water flooding his office. Dr. Caruthers, Galveston, considers himself very fortunate, in that he escaped with all his family, no damage to his office, and only about $500 to his home and furnishings. Dr. C. M. Doss, Angleton, is reported as having lost everything. Building in which his office was located completely wrecked. Dr. A. A. Dyer, Galveston, had considerable loss at home; no lives lost, and no damage to office. Dr. D. S. Killough, Galveston, had no loss at his office, his family all saved, though his household effects were considerably damaged. Dr. A. Sundt, Galveston, suffered some damage to his office, and had his home and entire contents washed away. His family being in Europe, escaped, but a family of five who were occupying the house during the absence of the family, were all drowned. Dr. Sundt's home and effects were valued at from $7,000 to $10,000. Dr. J. W. Simpson, Galveston, home and contents destroyed; no lives lost and no damage to property. Dr. F. D. Wolf, Alvin, lost all household furniture and a number of instruments considerably damaged. Dr. McGowan, Galveston, no lives lost, no damage to office. Had some damage to property in Houston. Dr. P. H. Rogers, Alvin, father's house badly damaged and barns destroyed. Dr. M. O. Perkins, Galveston, lost a sister-in-law; office damaged by water. Dr. B. T. Thielen, Angleton, instruments buried under four feet of brick and rubbish. He has left for Nashville, Tennessee, where he accepted a position in the Vanderbilt University. Dr. M. J. Lossing, Houston, had the misfortune of losing his sister and mother in Galveston. Dr. D. K. Murchison, Angleton, had a small loss.

THE

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CONTRIBUTIONS.

A WAY TO QUIET NERVOUS PATIENTS WITHOUT ANODYNES.

BY J. R. BELL, D. D. S., CLEVELAND, OHIO.

Too often the simple and more rational means of quieting nervous, irritable patients for dental operations are overlooked in this age of progression, and less satisfactory and effective means, like anodynes, are employed.

Then, too, there are patients who are made better subjects, and are more easily operated upon, by being previously prepared. For instance, the disuse of stimulants, or the use of a mild laxative, is often advisable, and it is especially necessary that some slaves to Dame Fashion be advised to remove their collar before seating themselves in the operating chair, for fear of self-strangulation. Sending a child to the toilet room often makes it more tractable. For several years I have had a hot soap-stone placed on the foot-rest under my patients' feet, if the feet are damp, or if the person is chilly or nervous; this acts like magic in quieting and soothing them, and often makes them drowsy, and in many cases puts them to sleep. We get splendid results from the "Egnalizer," as we call it, with delicate, nervous, timid patients, whose circulation is weak and have an enlarged imagination. Then we find we can work longer, with much less fatigue both to ourselves and patients in a temperature lower than in most schools and living rooms. And when we remember that the temperature of the body is several degrees lower in a sitting or reclining position, and that our operating chairs are placed near a window, where there is more or less draught, the "Egnalizer" and a lap robe over the feet and limbs act as a panacea for ills imaginary and real. If any one doubts my statement, let him demonstrate, or else forever hold his peace.

Recently I succeeded in quieting a very peculiar difficulty in a patient in a very simple way. The case was a lady, aged about forty-five, who, after I had gotten my morning's work laid out and well under way, evinced an uneasiness and restlessness, all of which seemed to originate in the left arm and hand. Upon inquiry I learned that the arm, from the shoulder, felt numb, twitched and disturbed her otherwise quiet nature, and as her uneasiness was certainly disturbing me and my operation, I had a hot soap-stone placed under her feet, and a vessel of hot water placed in her lap, in which I asked her to immerse the affected hand. To my delight, my patient settled back into a more comfortable position, with a beatific and peaceful smile, and I proceeded and finished my work without a single riggle or movement, any more than if she had never had an arm; in fact, she dozed various and sundrey times before I had finished. To be sure, the hand was in the hot water only a few minutes; therefore I can not ascribe the change in her circulation altogether to that. A hot water bag might be very useful in similar cases, as we know they are an indispensable article in the sick room and in the hospital, and more especially in all surgical cases where there is pain about the abdominal walls.

DAVIS CROWNS—A CASE IN PRACTICE.

BY C. H. WORBOYS, D. D. S., ALBION, MICH.

A man presented himself with two gold crowns on the central incisors that loomed up like a big brass sign on a small building, and on removal of which the pulps were found alive and in a normal condition.

Platinum bands of No. 28 gauge lap-joints were fitted to the teeth; then the teeth were ground to a cone shape, leaving the pulps well protected with dentin and an impression taken in moldine. Dies were then made and platinum caps swaged to cover the ends of the teeth and fit down to the bands. The bands and caps were then removed, soldered with pure gold, and replaced on the teeth and an impression taken. The case was placed on a Bonwill articulator, and Davis' crowns, that had been selected, were ground out with cone-shaped stones and fitted over the platinum caps. After fitting, the crowns were removed and filled with body, and the caps, which were punctured through the tips with an excavator, were placed in the crowns, which forced the body out around and up into them.

The pieces were then placed in a furnace and the body fused, which united the crowns and caps very rigidly. The crowns were made separately.

These crowns have now been on about a year, are all right, and the man is not now known as "that newspaper fellow with the two gold teeth in front."

DISASTROUS RESULTS FROM THE USE OF CHLORETONE FOR EXTRACTION OF TEETH.

BY C. S. KELSEY, D. D. S., ELYRIA, OHIO.

I desire to say a few words in regard to the new local anæsthetic, chloretone. We read in the *Dental Office and Laboratory,* edited by T. F. Chapin, D. D. S., about the use of this drug for painless extraction of teeth. We used a saturated solution as recommended, and oh! what mouths. The stuff not only caused swelling and inflammation, but the gums just sloughed off in great patches, leaving terrible looking tissue. It is a destroyer to the gums. We had our syringe perfectly aseptic, so the sloughing was not due to that. I don't see why Parke, Davis & Co. should recommend so highly this drug for a local anæsthetic. I thought our sad experience might help others who are so unfortunate as to try these new drugs.

TREATMENT OF ROOT-CANALS.

BY W. T. M'LEAN, M. D., D. D. S., CINCINNATI, OHIO.

You ask me to describe my method of treating root-canals. This is somewhat ambiguous, as the condition of pulpless teeth differ pathologically. I will, however, state the method of treatment I pursue when I find a dead pulp within a tooth that is causing trouble to the patient. I always apply the rubber dam; then proceed to cleanse the canal with oil of cassia and broach, removing the contents of the canal thoroughly, being careful not to pass the broach through into the apical space. I then dry the canal by injecting hot air, and place cotton saturated with *one two hundredth* per cent solution of the bichloride of mercury, and hermetically seal it by filling the root or tooth with cement. I dismiss patient for *forty-eight* hours; then, upon his return, I remove cement filling, and cotton. If pus is present I use hydrogen dioxide (Oakland), and remove all pus by injecting it into the canal; then thoroughly dry canal by injecting hot air and using heated platinum needle. This treatment, if considered necessary, is repeated after twenty-four hours. If not, I proceed to fill canal permanently. *My hobby in root-canal filling is powdered asbestos and oil of cassia and cotton.* After the canal is filled I protect it with the cement, and prepare my cavity for final filling. My opinion of personal success is that I do the work carefully, get direct access, and take plenty of time, and do not have to repeat the operation.

REMAKING OF VULCANITE DENTURES.

BY L. P. HASKELL, CHICAGO, ILL.

In the October JOURNAL are some items from British journals, where attempts are made to simplify methods, but are the reverse. As, for instance, the illustrated one on "Remaking Vulcanite Dentures." The attempt to place an old plate on a new model is a failure every time for two reasons. First, the plate will not fit the model, and, then, if it did, would not furnish a perfect articulation; and besides, the new teeth in the new denture need to be lengthened, in consequence of shortening of the gums.

To do the thing properly, make it all over, and arrange the teeth on the wax plate in the mouth, so as to insure correct expression and articulation.

Another item is on "Repairing a Vulcanite Plate" where it says: "Use the ordinary bicycle cement instead of chloroform." The simple fact is, no cement whatever is needed. Pack the rubber with a hot spatula on a clean surface, without resorting to holes, or dovetails.

DENTIFRICES.*

BY ALFRED J. WOLFERT, D. D. S., TOLEDO, OHIO.

The subject of cleansing the teeth and the mouth is one upon which the members of the dental profession do not all agree, not that they object to keeping the mouth and teeth in a cleanly condition, but the methods and materials employed have caused the diversity of opinion which exists.

Every dentist is frequently asked: "What kind of a dentifrice shall I use?" And when our patients question us as to the merits of extensively advertised preparations, what shall we say?

We are looked up to by many as conservators of the health of the dental organs and we should be a unit as to what should constitute a safe dentifrice to be used by the masses.

Let us first consider the situation as it presents itself to-day.

Innumerable preparations, widely advertised and extravagantly lauded as proper to be used as aids to the brush in keeping the teeth clean and the gums in a state of health, are to-day offered to the fortunate, or rather unfortunate public.

The success of the original speculator in dentifrices has evidently inspired and induced many others to prepare, advertise and market an almost endless array of preparations, all equally effective and wonderful in their properties.

They announce the many virtues of these dentifrices through the columns of the daily press, in journals, magazines, periodicals and quantities of pamphlet literature endorsed with recommendations from members of every profession and walk of life who state in praise of their favorite preparation that it leaves the mouth with a pleasant taste after using it.

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*Read before the Toledo Dental Society.

Competition is very keen because of the constant introduction of many new preparations. How often the advocate of this, that or the other preparation steps into your office and begins the recital of the merits of his article, not forgetting the demerits of all others. He leaves samples, prescription blanks, and literature, urging you to lend your aid in introducing and dispensing his preparation, to the exclusion of the others. This has become such a common occurrence that many of us, unconsciously, have, with these aids, pushed one or more articles, to the financial gain of some unknown person or persons, without investigating whether or not the preparation was harmful. Many of these preparations on the market are comparatively harmless, but most of them are certainly harmful and injurious.

Any popular nostrum or dentifrice, which is intended or calculated to cure *all* diseases of the gums, is surely a humbug. Such a dentifrice cannot be made. We should place no confidence in dentifrices put up by some dentists, and men outside of the profession, who claim for their preparations the properties of removing tartar, and whitening the teeth. As these dentifrices are either harmful or of no effect, in either case they are an imposition on the public, and should be condemned by the profession. Ought we as members of the dental profession lend countenance to such methods? Should we assist in circulating and recommending these nostrums, which may or may not be harmful?

I believe that the profession at large would heartily approve the introduction of some dentifrice, sanctioned by the various dental associations, for general use, but would not countenance anything for daily use, unless it be a very simple preparation.

If one starts with clean teeth, they may be kept fairly clean by use of the brush, water and floss silk, if enough time is given to the operation. A *good* tooth powder greatly facilitates the retention of the natural color of the teeth, and does not, and should not whiten them. All that may reasonably be expected of any powder is the removal; by mechanical friction, of stains and discolorations from the natural color of the teeth, which, after all, is far from being white. The object of using a dentifrice at all, is to assist the action of the brush. If the brush gives sufficient friction nothing more is needed.

The chemical and medicinal properties of tooth powders are relatively small when compared with their frictional and mechanical properties, and I repeat, that if the brush alone affords sufficient friction to keep the teeth clean no dentifrice is needed, except water, which is the best and simplest dentifrice we can use.

Very often, however, something more *is* needed; and since the principal action of a powder is mechanical rather than medicinal, some substance, which affords the increased friction, should be selected for the compounding of our dentifrices. It is very necessary, however, to regulate its frictional power. It should never be gritty, but very finely grained, and further, it should be antacid in character. Fortunately we have at hand such an article that meets all requirements—that is precipitated chalk (carbonate of lime). Its antacid character corrects any acidity present. Being absorbent, it diminishes the mucus secretions, if rubbed between the teeth and left over night. It slightly stimulates because of its astringent property. Miller recommends precipitated chalk taken upon a tooth brush with a dash of neutral or slightly alkaline soap, but prefers a tooth soap to the powder. The presence of an antiseptic agent in the powder may be desirable, but most antiseptic ingredients are to be condemned and there certainly is no real necessity for the introduction of prophylactics into tooth powders, especially when the powder is intended for daily use, and one that is recommended in all cases. While the gums are in a healthy condition there is no need of medicine, and I fail to see why we should prescribe for a pathological condition of the mouth until the necessity arises. But when there is an abnormal condition, it requires professional treatment.

Every dentist is, or ought to be, capable of meeting these conditions, to add such therapeutics to his simple dentifrices as is necessary to each case.

As the basis for a simple powder, I submit the following formula:

English precipitated chalk, 10 dr.
Powdered carbonate of magnesium, 6 dr.
Powdered white sugar, 3 dr.
Powdered white castile soap, 1 dr.

Mix, flavor with rose or wintergreen, as preferred, and sift through a very fine sieve. This powder will serve all purposes where no medicinal effects are desired.

If an astringent effect is wanted add 20 drops tr. Myrrh, and for a stimulant add capsicum, 20 drops.

This powder may be made into a paste by mixing with glycerine, or with honey and listerine. Incorporated with softened castile soap can be pressed into cakes, and if mixed with mucilage or gum arabic it can be made into tablets.

When soap is objectionable, use instead, powdered soap tree bark. If sugar is objected to, use 15 grains of saccharin. Use cuttlefish bone in place of carbonate of magnesium, if more grit is desired. Thus in various ways the powder may be modified or changed to meet the requirements of special cases.

The majority of people would be better off without the daily use of gritty powders, medicated pastes, tooth soaps and the harmful misuse of the brush.

We must give some thought to mouth washes, as a great many people prefer the liquid dentifrice. Cleanliness has not yet been accomplished by means of the wash alone. No amount of special, local, antiseptic washing of the oral cavity will render it immune from caries. The action of an antispetic mouth wash will amount to nothing if it has not been preceded by a thorough mechanical cleansing. A perfect antiseptic should be effective, yet harmless.

The great diffculty lies in the fact that nearly all of the materials that possess antiseptic qualities are either contra indicated altogether in the mouth, or can be used only in such a diluted state as to do no good. While others are excluded on account of taste or smell.

In milk of magnesia or in lime-water the profession will find an excellent alkaline mouth wash.

A series of very carefully devised experiments were made by Miller to test the action of antiseptic solutions upon bacteria in the mouth itself, and not merely upon cultures outsides of the mouth.

He found considerable difference in the time required for sterilizing or destroying bacteria in the saliva of different persons, and from a long series of repeated tests he found that only saccharin and Benzoic acid were left from the long list of antiseptics to construct mouth washes for daily use.

Saccharin, especially in alcoholic solution, manifests a very remarkable action on bacteria in the mouth; and at the same time is one of the least poisonous of substances used in the oral cavity, and has no deleterious effects on the teeth.

Miller prescribes the following for an antiseptic wash:

Saccharin, grn. 2.5.
Acid Benzoric, 3.
Tinct. Rhatani, 15.
Alcohol Absolute, 100.
Ol. Menthol, pig, 0.5.
Ol. Cinnamon, 0.5.

One part of the mixture to 9 of water kept in the mouth one minute has a very marked effect on the living bacteria.

If a 3 per cent neutral solution of H_2O_2 be used the germicidal power is greatly increased. The best means, then, for attaining a scientifically clean mouth, is to rely on a thorough application of mechanical cleaning, with tooth brush, floss silk, etc., and by antacid, stirilizing mouth washes.

In conclusion, I submit a portion of a report by A. H. Peck, D. D. S., M. D., Chicago, who, with Professor Hall, tested and analyzed solutions used as mouth washes. They tested them "to determine whether they were acid in reaction, alkaline or neutral. Also whether any of them contained mineral acids, or anything of like nature, that would render them harmful to the delicate structures of the oral mucus membrane."

He says: "In the test to determine their relative potency as antiseptics, I began by using five drops each of these agents in the culture tube, which latter contained 10cc. of bouillon. As they failed to prevent the development of bacteria, each was gradually increased in amount, until 20 drops were reached.

"Of sanitol, this quantity, twenty drops, proved successful; no development of germs occurred in the tube. That the above result might be verified, a number of subsequent plants were made, in which I used a similar amount, and in no one of these did growth occur.

"As there are 76 drops of sanitol in one c.c., this agent is antiseptic in 1 to 38 parts. By the analysis, from a chemical standpoint, sanatol is shown to be neutral in reaction, and to contain no mineral acids or other ingredients that might prove harmful to the soft tissues.

"I have had an application of this agent confined to the soft parts for 36 hours (as I have had all others in this group), and found its therapeutic action to be that of a mild stimulant.

"Next in potency as antiseptic is borolyptol. In the culture tube, in which twenty drops of this agent were used, just the slightest amount of development of bacteria was observed. At least a dozen subsequent tests of this agent were made with no variation from the above result. The chemical analysis of borolyptol showed it to be acid in reaction, containing no mineral acids, however. Its contact with soft tissues for 36 hours showed it to be in this respect, therapeutically, a neutral agent; no evidence of stimulation being produced.

"Twenty drops of Pasteurin restrained the development of bacteria in the culture tube, but not to the extent that borolyptol did.

"Pasteurin is acid in reaction, and the chemical analysis showed it to contain a trace of sulphuric acid. It is non-stimulating to the soft tissues.

"Twenty drops of Wampool's solution restrained the development of bacteria in the 'unit of culture media,' to about the same extent as Pasteurin did. It is non-stimulative to soft tissues.

"Twenty drops of glyco-thymoline failed to restrain development of bacteria in the culture tube to any appreciable extent.

This agent is strongly alkaline in reaction, and contains no mineral acids. It is non-stimulating to soft tissue.

"There was *full* development of bacteria in the 'unit of culture media' from the use of 20 drops each of zymocide, which is strongly acid in reaction, but which contains no mineral acids; of benzolyptus, which is slightly alkaline in reaction, and contains no mineral acids; of euthymol, which is slightly acid in reaction, and contains no mineral acids; of listerine, which is strongly acid in reaction and contains no mineral acids. Fifty drops of sozodont produced no perceptible restraining effect on the development of bacteria, in the 'unit of culture media.' It is alkaline in reaction."

CINCINNATI ACADEMY OF DENTISTRY.

Dr. N. H. Grove presented models of a case showing lack of development of the anterior teeth, occlusion taking place only on one side and that between two of the molar teeth. The paper of the evening was apropos of the case presented, and was as follows:

DEFECTS IN ENAMEL AND DENTIN.

BY E. H. SHIELDS, M. D., D. D. S., CINCINNATI, OHIO.

Jonathan Hutchinson, who was looked upon—but is not now looked upon as the little god he was several years ago—advocated the advanced theory that such teeth were due to hereditary syphilis. It is not so much a condition found in the molar teeth, but in the incisors. The medical profession, however, accepted his statement that these defective teeth were due to hereditary syphilis, and it seems strange that the dental profession, who are placed in a position to make observations, have never refuted Hutchinson's statement. During the time I practiced dentistry—a period of four years—I had opportunity to examine the teeth and notice the defects of the enamel and dentin, and at that time I began to think for myself, and found children perfectly healthy and in whom none of the syphilitic characteristics—sunken nose, etc., were present; so I began to look for another cause for the defects in the enamel and dentin, and at that I refuted (to myself) the statements made by Jonathan Hutchinson.

The medical profession to-day, when they see teeth of the kind to which reference is had, will say the child is suffering from hereditary syphilis. Since I have been practicing medicine I have been able to make a double observation, i. e., dental and medical, and as I am interested more in syphilis than in general medicine, I made more careful observations, and have concluded that the so-called Hutchinson or peg-tooth, is not characteristic of syphilis. I have found this condition exists in all exanthamatous diseases and in many other diseases.

The question arising in my mind is, what causes it? Naturally we will say it is due to defective nutrition. That is all true. Furthermore we know the development of the tooth is very slow, and we would naturally take it for granted that in order for these marked changes to take place in a tooth the disease which impairs nutrition must exist for a long time, for if it existed a short time only there would be but a slight defect in the tooth. However, such is not the case. When we consider that this condition is the result of measles, scarlet fever, whooping cough, diphtheria, varioloid, etc., we know the duration of these diseases is short; measles two weeks, scarlet fever perhaps three or four weeks, with as many more for convalescence. Diphtheria, since we have antitoxin, exists but a few days, while formerly it was of weeks' duration. Inside of three or four days the membrane is now cleared up, and inside a few additional days our patient is well. In another affection, known as rickets, a disease of childhood, we fail to find in the negro (who is very prone to rickets) this condition in the teeth. What observation I have made myself—certainly I never examined many piccaninnies' teeth—but you know how common it is to see bow-legged negro children, etc., and at the same time in examining the teeth you will find them perfect.

If we accept the dictum that this condition of the enamel and dentine is due to impaired nutrition, why is it that the bones do not suffer likewise? Because at this age the epiphyses are not joined; the bone is growing, and why should these changes not take place at the epiphesis of the bone and the bone cease to grow, or the bone become deformed? In rickets we have everything present for the formation of bone, but there is a faulty carrying out of the process. By examining the epiphyseal end of a rickety bone you will find nature has placed all the elements in position for the formation of bone, but the carrying out of the process of ossification does not take place. Since measles has but two weeks of duration, why do such marked changes take place in a tooth, when we know a tooth grows very little in two weeks to thirty days at that time of life? Whooping cough running its course in six to eight weeks, why do we find the teeth suffering such destructive changes? In the case of measles, why should the lack of nutrition be carried on for so long a time after the patient has recovered his health, and why should the lack of nutrition be limited to teeth and found nowhere else? The fever accompanying these diseases is not high—in measles 101° F., scarlet fever 102 or 103° F., the temperature can be reduced very easily; the physician seldom allows the temperature to go above 103°, or that far, without the use of some antipyretic. The changes which take place in the tissues are the result of high temperature, but since this temperature is only for a few hours' duration, why should we find such marked destructive changes taking place in the enamel and dentin when the febrile condition is so mild and of such short duration?

My object is not so much to impart knowledge as to gain knowledge. You gentlemen who have been in practice several years have seen many of these cases, and during the coming school vacation you will come in contact with many of these cases among children. I would like to ask the members of the academy to make a close observation of the teeth of children; inquire of their parents when they had measles, and if they had any other diseases incidental to childhood. I would like this information to complete my data upon this subject. A good many of the medical profession still adhere to the old saying of Jonathan Hutchinson, that this condition is due to hereditary syphilis, but as I said before, I think Jonathan Hutchinson is wrong, and I would be very much obliged to the members of the academy if they would make some observations and report before this body.

DISCUSSION.

DR. SCHRAMM: I am in about the same condition Dr. Shields labors under. It is hard for me to understand why such conditions should take place, but I wish to draw Dr. Shields' attention to one point wherein his logic seems faulty. He asks why the bones do not show a cessation of growth when the teeth do, forgetting that the teeth are not a part of the osseous system. I shall be only too glad personally to record observations and make it my business to solicit the aid of others to investigate cases of this character. Something must have actuated Jonathan Hutchinson to make such a statement, and there must be something in it when the entire medical profession accepts it. What there is in it remains to be seen. I believe Dr. Shields is correct in considering Dr. Hutchinson's position untenable, but we cannot say so until we have a better proof. It is easy to criticise but hard to improve upon a thing, but until we know Dr. Hutchinson is wrong in his conception of this trouble we will have to give him credit for the so-called Hutchinson tooth.

DR. W. T. MCLEAN: The paper is all right so far as it goes, with one exception, and that is with reference to the physical condition of the patient in the matter of nutrition to the osseous structures. Owing to the fact that the teeth are dermal appendages, I believe the mal-nutrition during the process of development of the teeth is what we have hung our hats upon, with reference to the pathology of this condition. I am inclined to believe the Hutchinson theory has not yet been disproved with reference to the teeth, and until we have some better theory we will have to depend upon it. I can see why we have imperfect teeth, which is due to the depreciated systemic condition during development, and that is what we have to account for this condition. I have had a few cases presented to me for consultation and treatment, and the case presented here to-night is one of this class; I have never seen one more extensive than this, I think. In those cases the dentist usually inquires the physical condition of the patient during the process of the development of the teeth —at the age of six months to three years—and in that way the dentist concludes the child has had some condition which caused a lack of or cessation of the development of the tooth structures. As far as the osseous structures are concerned, that is different, from the fact they are developed in a different way. There is one part of the tooth which cannot be classed as a dermal appendage, and that is the enamel, the hypoblastic layer. The prognosis on the part of the dentist for the prevention of further decay or the restoration of these teeth is dependent upon the individual case presented to the dentist. In the case presented to-night by Dr. Grove, I would sacrifice some of the permanent molars to secure a more perfect occlusion of the teeth. It is difficult to discuss a paper or the history of a case without having had a little time to study out the various points made by the essayist, and I therefore feel I have stated about all that is usually known upon this subject.

Dr. Shields: Drs. Schramm and McLean have both misinterpreted my remarks. I did not attempt to prove that the condition of the teeth was analagous to that of bone, but simply made a comparison of the degenerative changes which take place in one and do not take place in the other. In reference to Dr. McLean's statement that the tooth is a dermal appendage, that is correct, and we have nutritive changes taking place early; at the time when these diseases manifest themselves the permanent tooth is very nearly completely formed. The central incisors are erupted at the sixth to seventh year, and when they make their appearance through the gum the root is very nearly completely formed, and if you will extract one of these teeth later in life you will find no defect in the cementum whatever, but it is confined wholly to the enamel and dentin. Examined under the microscope, you will find the pulp canal enlarged and you will find a protective layer of dentin corresponding to Magitot's dentin, thrown out. I presented to the class at the Cincinnati College of Dental Surgery six or eight weeks ago some sections of teeth showing where the pulp cavity was enlarged, the enamel had been lost, or never was present, and showing plainly the layer of protective dentin thrown out around the pulp. At the time children suffer from these various diseases the enamel of the tooth is completely formed; at the age of six, when the child has measles, the tooth begins to erupt, and the enamel is completely formed. The root is not completely formed at this time, however. What causes this change in the enamel? Is it absorption? It is a question, in my mind. I doubt it because the order of life in a tooth is so low I cannot conceive it being possible for absorption to take place in a tooth. You know how slowly the process of throwing out of bone to cover an exposed pulp takes place; the arteries entering the pulp are very minute, and it is easy to understand why changes take place in a tooth after the tooth has been formed.

PROCEEDINGS OF THE THIRD INTERNATIONAL DENTAL CONGRESS.

(Continued from page 520.)

HELD IN PARIS, AUGUST 8-14, 1900.

Filling by Means of an Adjustable Artificial Enamel.

BY ED. TOURET-FANTON, PARIS.

This process of applying the enamel inlay is intended to simplify and popularize the aesthetic method of filling by means of small portions of porcelain or enamel, in most instances doing away with the necessity of a special furnace and the time and labor demanded by making a fresh preparation of the inlay for each case. This is accomplished by keeping in readiness small and easily adjustable inlays, which are adapted to the cases which most frequently occur under slightly veriable conditions, just as we have in our power a simple and easy means of making fillings of a kind analogous to the central cavities of molars by using *batonnets* of porcelain provided by the depots.

The case which lends itself best to a judicious application of the adjustable inlay is that of caries of the small molars, as much by the necessity for some filling well looking and durable, as by the easiness of application on account of their frequency, and the very slight variation in their shape. But the adjustable inlay will serve first of all the restoration of the lateral caries of the small molars, a caries which presents itself under appearances very much alike, and which may easily be reduced to a uniform type by the action of the engine on the natural tooth and by grinding down the enamel. This adjustable inlay is formed of a small quantity of artificial enamel, having the form of a lateral aspect of the molar with an angle advanced on the triturating surface in the hollow between the two tubercles; it is the hollow itself which forms the advance angle. The adjustable inlay has hollow sides like a Logan crown, but with finer edges to facilitate moulding in adjusting. The inner aspect, on the contrary, is bossed towards the center, so as to form a prominence very like the head of a shirt button, which is placed in the cavity to be filled, but which is constructed in such a way as to be adaptable if it does not fit at first. The interior face is roughened so as to enable it better to adhere to the cement, the outer face is enameled in the same manner as mineral teeth are. Two sizes are used, and the fixing is very simple, being done with cement.

The placing may be done in the same way as any other inlay is fixed, being more solid than pieces of enamel borrowed from natural teeth, which, besides the disadvantage of their organic origin, are more brittle and have less resisting power, their weak points being the part adjoining the dentin; this is replaced in the adjustable inlay by the kind of mushroom, or button-head in the inside, which forms a strenthening or sustaining point at the same time that it forms a solid holdfast. On account of the ease of its application it is to be preferred to enamels baked specially for each case, for these take much longer to fix on account of the time required for their preparation, and which even then require to be adjusted to the mould; again, their method of retention is rather inferior, as no trouble is taken to give them a special shape, and if this were done it would require a longer time. The adjustable inlay, on the contrary, may be fitted and placed at one sitting. It is of great use where there is very little time at the disposal of the patient or operator, and on all occasions it is of value to those who have not at hand the apparatus required for making small inlays by model.

In conclusion, the adjustable inlay may find its use in various other cavities, and it is thus that M. Platschick and I were able to use the first of those we made in the small molars, in fillings of the lateral labial and even of the occlusal surface of the great molars. The principle may also be applied to the incisors, and ought to be applicable to the canines, and but the use is not so appropriate in these as in the small molars, where it gives the best results, and where its application is constant.

TREATMENT OF INFECTED TEETH.

BY M. L. QUINTIN, BRUSSELS.

M. Quintin's object, he states, is less to report a discovery than to publish a method which he had used for about six years, and which had given results far beyond his hopes. He did not intend to go into the history of this class of treatment, as some of his *confreres* in preceding congresses had fully treated that side of the question much better than he could. As, therefore, time was limited, he preferred not to weary them with that question.

Numberless were the methods of treating caries of the third and fourth degree, and there were as many methods as there were men who treated this class of affection. After having tried the greater part of the methods usually employed, some with much and some with little success, and some which were decided failures, he had been led to adopt a method which in a total of 7,000 cases gave one negative result only. He would describe under what conditions afterwards, but he was justified in saying that any treatment which gave such results was worthy of being submitted to the approval of the *elite* of the profession. Inasmuch as the application of his treatment demanded always the same *modus faciendi*, he would meanwhile enumerate the different cases where it might be used. (1) Teeth with pulps dead either artificially or pathologically, but without periostitis; (2) teeth with or without dead pulps, but effected with periostitis; (3) teeth with complicated periostitis (fistulary abscess, etc.).

In the first class, when the canals have been cleaned of all the root *debris* by the help of a hooked Donaldson, the author injected water oxygenated to twelve volumes in each canal. Then, by means of a backward and forward motion, he caused the antiseptic to send from the interior all that remained in the teeth. He then dried out the canal by means of cotton, and introduced a paste containing 5 per cent. of iodoform and formol. In certain canals which were too narrow he placed at the entrance a drop of formol, which, by means of a broach, he forced up as far as possible. He then allowed a shred of cotton steeped in a 5 per cent. solution of formol to remain in those canals which were large enough to admit it. At the next visit he cleaned out the canals anew, and then filled with his paste. In cases of necessity, he could do without the second visit, and where he had done so no ill-results followed. It was in this class of cases that he had the single failure before mentioned, but it was only right to say that the periostitis which brought the patient to him was the fifth attack.

In the third class the treatment was more rapid in this sense, that having cleaned out the canals with oxygenated water, and having filled them with the paste, he was able to complete the filling in one visit, the abscess having been pierced and the fistula cured in three or four days. He must remark here, that in certain teeth especially incisors, attacked by fistula of long standing, it it was necessary to proceed cautiously. The apex was frequently widely open; and it was necessary to use care not to press home the paste, so as to come in contact with the alveolo-dental ligament. He also advised prudence in regard to the canines. He had often noticed that œdema of the face had followed treatment of this tooth. There was, however, no pain on percussion, and he was unable to explain clearly this special sensibility of the canine, but he hastened to observe that the complication soon passed off. In this, as in the first group, he had to complain of no failures.

The first and most natural objection to his paper would be, he anticipated, that the treatment was not new. That was undoubtedly the case, and he had in the beginning of his remarks claimed no new discovery, but simply reported his own experience in following a certain line of treatment which had satisfied him. In treating root-canals he thought that the chief aim of the operator should be to close the apex. That was why he used an iodoform paste, which he pressed up to the apical opening.

TWO CASES OF GINGIVO-STOMATITIS WITH ALBUMINURIA.

BY CHAS. LEE, PARIS.

In introducing his remarks, M. Lee said that the subject of his communication had been suggested to him as conducing to the advancement of stomatological knowledge by two cases of ulcero-membranous gingivo-stomatitis, and his researches had taught him much on the subject of the nature of the buccal lesions which were to be observed in chronic albuminuria.

His first case was a dressmaker, about 54. She complained of pain in the mucous membrane of the mouth which was accentuated by mastication, and she attributed her illness to the bad state of her teeth. The first examination of the mouth revealed much tartar, numerous carious teeth, stumps, and teeth bared from the gums. She wore also a plate with six upper teeth. There were also numerous ulcerations on the lower lip, on the inside of the cheeks, on the sides of the tongue, and on the palate. Besides these she also presented several local symptoms, such as pain on masticating; thick abundant glutinous salivation, especially in the morning her breath was fœtid and repulsive; she had lost all sense of taste, and the submaxillary ganglions were slightly swollen and indurated. Her general symptoms included headache, want of appetite, light diarrhœa, indicating a feverish condition. Further examination disclosed the fact that she had Bright's disease, and hypertrophy of the heart.

The second case presented certain points of analogy with the first. This patient, also a woman, was 58 years of age, and she had four patches of ulceration in the mouth, two of which were on the palate on a level with the second left molar, which was carious; the other two were situated one on the labial surface of the lower gum, on a level with the six-year molar on the same side, and the other on the same gum, level with the right lateral incisor. The areas of these ulcerations varied from 5 millimeters to 1 centimeter, their surface being of a stale gray, and their edges irregular. She also complained of intense pain; salivation was abundant, but less in quantity than the first case, and the breath was fœtid, and examination showed she also was suffering from albuminuria. On the basis of these two cases M. Lee set himself to consider and to investigate the connection between Bright's disease and gingivo-stomatitis, and he found that a rapid glance at the results of his investigations led him to this important conclusion—that uremic stomatitis, like the stomatitis of diabetes, like that of pregnant women, and like that of many other states, is a septic condition, which has for its sole and only pathogenic agency buccal polymicrobism. The two cases given above were suffering from albuminuria, which by enfeebling their economy had destroyed its equilibrium. The body in general, and the buccal cavity in particular, were in a state of morbid receptivity, and the infection naturally sought the weakest part. Now, in the two cases the most weakened part was the buccal cavity, and in consequence of the bad state of the teeth polymicrobism was easily set up.

The conclusions he has arrived at are set forth by the author as follows: (1) Ulcerative membranous stomatitis in patients suffering from Bright's disease is a polymicrobic septic stomatitis which may be classed with the variety of septic stomatitis described by Dr. Lebedinsky; (2) such a stomatitis may pass through various conditions; it may be erythematous, then ulcero-membranous, or even gangrenous; (3) the stomatitis of albuminuria commences almost always on a level with carious teeth or infected stumps; (4) those who are suffering from albuminuria may safely avoid an attack of stomatitis if their mouths are kept in a hygienic condition.

(To be continued.)

FORMALDEHYDE IN CHRONIC ABSCESS. I have used formaldehyde and carbolic acid, equal parts, with remarkably good effects in teeth which, when opened up, have discharged a large quantity of pus, implying a chronic abscess with large sac. At first sitting, evacuate and leave vent, with light dressing of formaldehyde and carbolic acid, equal parts. After a few days repeat dressing, sealing with gutta-percha.—*S. Lever, in Dental Cosmos.*

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

HEMICRANIN AS AN OBTUNDER FOR SENSITIVE DENTIN.*

BY K. J. SCHUMANN, ATHENS, TENN.

Here is the manner in which hemicranin may be used:

Hemicranin, few grains.
Sp. nitrous ether, qs. to make thin paste.

Sig. Apply to cavity, allow to remain until ether evaporates, then excavate. If this application should not answer, use same again, and wait until ether evaporates; then seal with cement and leave for an hour or until next sitting.

There is nothing that will prove more satisfactory. The action of hemicranin differs from every other drug used in the series of experiments. The dentinal tubuli, instead of becoming closed from its application, receives it in solution, therefore obtunding the tract to be worked over quite a distance in line of tubuli. This drug sealed in cavity, covered with a paraffine dressing and further cements three days, was found to have been absorbed; not a trace could be found in cuttings from the cavity walls. Chloroform seems to act nearly as well as the ether, only slower in evaporation.

In placing hemicranin in cavity, always use rubber dam where practical. Proceed as follows: Apply dam, dry out cavity thoroughly, using warm air. Clean away as much debris as possible; introduce some warm alcohol, if patient cannot stand cold; wipe out cavity with the alcohol, allow it to evaporate and then apply the mixture of hemicranin as directed above.

Along with the treatment by medications of sensitive dentin, operative procedure plays a most important part. The thorough knowledge of the instrument used, the perfect manipulation, as well as speed, all play leading parts. A patient treated rapidly as well as painlessly is an achievement of good dentistry to be seriously considered.

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*Extracts from Items of Interest.

To work rapidly, one needs faultlessly sharp instruments. In using an obtunding agent, the excavator and bur should be as carefully examined as the cavity. No obtundent will give thoroughly satisfactory results without the smaller details of dryness of cavity, speed of engine and sharpness of burs are carefully considered. In the preparation of the ordinary cavity for, say, the amalgam filling, nearly every dentist disregards dryness of cavity. To be sure, those operators who always apply the dam need pay but little attention to moisture, as it does not exist. But those who use the engine, but without the dam, should consider, first, dryness of the cavity.

In the filling of a tooth where there exists only partial sensitiveness, the need of careful manipulation of the instrument and a dry cavity is sufficient. In excavating this class of cavities, dry with pledgets of cutton and excavate; if with engine, run it rapidly, always using a draw cut where possible. Never cut after saliva has invaded the cavity. Remove instrument and dry cavity as before. This procedure will make many grateful patients.

The most common form of sensitiveness I have met with is a condition where pulp exposure obtains in central and lateral incisors, superior and inferior. I invariably use the preparation of hemicranin in excavating this class of cavities. Its action is more prompt than cocaine crystals, and the results far more gratifying.

There exists a condition of hypersensitive dentin from mechanical abrasion that may be considered here. In the mouths of the old, mastication gradually wears away the grinding surfaces of the teeth, until in some cases hyperesthesia of pulp and peripheral nerve ends in tubuli exists and becomes necessary to treat. In these cases hemicranin is not applicable alone. Fortunately, so few of these cases present for treatment, we are not often called upon to give relief. Nature, by causing the recession of the pulp within the canal, has rendered us valuable assistance. However, the treatment I employ in such case is: Dry off surface of tooth to be treated; isolate it, if need be; rub together equal parts of hemicranin and silver nitrate; add, on glass slab, one drop of nitric acid. Take a pledget of cotton and saturate it with this mixture and apply it to surface of the tooth. Allow it to remain a few moments, then wash off with syringe full of water. This treatment will suffice for several months, but must necessarily be repeated, when, by the mechanical abrasion, the tooth again becomes worn.

I invariably use hemicranin in connection with silver nitrate in treating caries in deciduous teeth, applying it with equal parts hemicranin and nitrate silver. Right here I would say that hemicranin, in connection with pot. chlorate, is a very useful thing in acute stomatitis. In apthous or ulcerous stomatitis, previous to using pot. chlorate and hemicranin, the two per cent. solution protargol as wash is beneficial. In pyorrhea, equal parts silver nitrate and hemicranin applied to the denuded roots relieves considerable pain. The silver treatment, of course, could not be applied to front teeth on account of unsightliness from silver application. This silver nitrate and hemicranin is particularly adapted to cases where pyorrhea has extended sufficiently far to produce the denuded condition of root, and where caries has attacked the root high up.

THE USE OF PEROXOLES IN DENTAL PRACTICE.*

BY L. L. DUNBAR, D. D. S., SAN FRANCISCO, CAL.

(Read before the California State Dental Association, June, 1900.)

I desire to present a brief report of the action of these new combinations under my observation and clinical experience during a period of one year since my first acquaintance with them, and for explanation will say that Peroxole is a generic term for certain combinations of peroxid of hydrogen in aqueous and alcoholic solution; (three per cent.) combined with certain well known antiseptics and germicides which do not decompose Hydrogen dioxide. Such agents are, Carbolic acid, Salicylic acid, Camphor, Thymol, B Napthol, etc. Those I have used are combined with camphor and menthol under the names of Camphoroxol and Menthoxol, respectively.

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*From Pacific Dental Gazette.

The design being to deodorize, disinfect and to oxidize and destroy degenerate tissue, the chemical changes in the compound incident to the oxidation frees the camphor or menthol and leaves it within the diseased area as a preventive or reinfection. Its successful use by European practitioners in abscess of the middle ear, and in treatment of wounds, induced me to try the compound in chronic abscess of the alveolus.

My first case was a typical one of long standing involving the right lower first and second bicuspids with fistulous openings from each, and every indication of an area of carious bone. They had been treated before for a long period without success, the practitioner condemning the teeth to extraction after the usual treatment of the root-canals and curetting the walls of the carious sac.

The treatment given was the surgical removal of carious tissue through enlarged fistulous openings and the flooding of the entire tract with Camphoroxol, a 50 per cent. solution in warm water driven through the rott-canals by means of an abscess syringe under pressure, using as much as two ounces of solution each time. Under this treatment, repeated at gradually increasing intervals, the parts healed perfectly and in about a month I was enabled to desiccate the root-canals and flood with 50 per cent. formalin solution. After again drying, the roots were closed permanently with gutta-percha, in which condition they remained for nearly a year to admit of reorganization of the impaired maxillary support when the roots were crowned with gold shell crowns, thus preserving two valuable masticators.

Two cases of caries of the maxilla, due to long-continued infection from septic matter contained in the roots of superior right lateral incisors and centrals, which had been injured by accident, one by kick of a vicious horse, and one by fall from a bicycle. Both were of long standing—five and six years respectively. The root-canals had never been opened into and septic matter was stored therein abundantly, although both had been under treatment, so-called, the former by physicians and the latter by a dentist, whose only work was to restore the displaced teeth with splint and no subsequent care, the resultant abscesses being ascribed to the fractured alveolar plate and treated by use of a mouth wash only. Phenol-sodique being used for some time.

Opening into the root-canals, removing tissue debris and flooding with 50 per cent. camphoroxol, washing the same out through the fistulae, brought about a most happy result, curreting of the carious area being resorted to in the first case only. In one case I used Menthoxol, only because I happened to be out of the camphor combination, its action being much the same so far as I could observe, except that the taste of the menthol compound was complained of. The action upon necrosed tissue was very prompt and satisfactory in both cases. Indeed this action was demonstrated in a most convincing manner in the case of an implantation which refused attachment and where to check a persistent flow of pus I injected menthoxol full strength. The accompanying example of its effect will tell its own story for the enlightenment of any one who might be likely to discredit such rapid solvent action. The tooth was in position in a gold-cup splint for six weeks, being subjected to an injection of a small amount (about one drachm of the peroxole), every second or third day. I believe we have in these combinations, valuable medicaments for local use in such cases as presented, and beg that others may experiment and report upon the same in the future.

HOOD OR CAST ABUTMENTS.*

BY C. L. ALEXANDER, D. D. S., CHARLOTTE, N. C.

Where it becomes necessary to avoid a display of gold, hood or cast abutments for dental bridges can be employed to great advantage, and are easily made as described here.

In order to give a more comprehensive idea of the method we will describe in detail the mechanism of two cases where the conditions of the mouth frequently call for and demand such abutments.

First. Possibly a live superior cuspid is the most difficult and unsatisfactory tooth to provide with an attachment to serve as a support for a bridge, therefore, we select such a case. However, the same method of constructing a hood for this tooth can be used for all the anterior teeth above and below. By an examination of the occlusion of the teeth we ascertain just how much the lingual surface must be cut away to admit of sufficient space to give strength to the hood. The tooth must be prepared so the base of the hood can be made to extend well under the gum margin also to the cutting edge and far enough to the front on the approximate surface to prevent the margin from being a point of contact with the adjoining teeth. Over this prepared surface a sheet of 120 rolled gold foil is burnished to a near fit. The tooth is now provided with a groove extending across about one-eighth of an inch below the cutting edge and running well down on the sides. This groove is fitted with a staple shape platinum wire. The hood is again placed to its position and burnished down well over the surface and wire. When removed from the tooth, if the little wire staple does not come out in position, it can be placed in the hood as the imprint upon the gold will show correctly where it belongs. By soldering with 22k. solder the staple and hood are united and placed back upon the tooth for final adjustment. This is done by the use of a burnisher and a pair of small curved scissors. Make a perfect fit, then take an impression in modeling compound while the hood is in position; the occlusion is obtained at the same time when you think it necessary.

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*From Dental World.

After the case has been invested and the modeling compound removed, you will have the case shown up in relief ready for the restoration of the lost parts in wax, and after this is accomplished, the wax restoration is lined with No. 60 rolled gold leaving uncovered the lingual portion of the hood which will serve as an opening for the introduction of the gold solder when the piece has been cut away from the articulator, reinvested and the wax boiled out 22k. solder is used to fill in the gold lined matrix thus formed. The gold hood obtained is now placed upon the tooth and given a partial finish ready to be connected with the bridge proper.

We often find it, as desirable to hide from view the gold used in connection with a bicuspid as we do the cuspids. This is done by making a hood substantially in the same manner as described. We will try and make plain the difference. In preparing the tooth the inner cusp is cut down, not enough however to injure the tooth. The groove is made in the same way as described running between the cups.

After making the base of the hood an impression is taken (using a very limited quantity of the impression compound) from which the hood is transferred to the articulator and fitted up with a cusp which has been stamped for the purpose. See that the occlusion is perfect, then fill the cusp with 22k. solder, and then adjust it to its position upon the hood, using wax as a medium of connection. The hood is now cut away from the body of the investment and waxed up to restore the contour. Only that surface of the wax representing the lingual aspect is covered with gold, using 120 rolled gold for this purpose. To assure a more perfect contour the little angular corners that are visible are covered with very small triangular pieces of 30 or 60 rolled gold carried to its position upon a moist finger; this is suggested owing to the extreme delicacy of the work. The piece now ready to be invested for soldering shows the wax exposed to view on the mesial and distal surface, both of these sides must be left open when the piece is invested to admit the solder. To attain this result we cover one side with a little disk of wax made by pressing a particle of wax between the fingers; when we invest this side is forced down through the investing material, until it strikes the bottom. After the investment has set thoroughly, that part covering the disk of wax is cut away. The wax is now boiled out leaving a matrix having an opening on both sides through which a coating of borax is applied; the case is then placed upon a wire gauze soldering frame and the upper-opening packed with 20k. solder. When the heat is properly applied the solder flows entirely through, filling up the under side; in case of failure to do this the piece is turned over and filled with solder sufficient to perfect the contour.

Sometimes you will find it necessary to use pins or posts for retaining purposes instead of the staple shaped wire, again it will answer all the demands to burnish the gold base well down in the groove. Cast fillings are made in about the same way as the bridge abutments. In some cases a lug soldered to the base of the filling, serves the purpose of a retainer, and in very simple cases we depend upon the walls to hold the fillings in place just as we do in retaining porcelain inlays. The two cases we have outlined will give a general idea of the method. Nearly every case will have some peculiarity of its own to be overcome, a little study and judgment on the part of the operator will enable him to make variations to meet the requirements of any special case which he may undertake.

GOLD OUTLAY FILLINGS.*

BY W. G. BROWNE, D. D. S.

We have inlay fillings and it seems proper to call what I propose to describe as gold outlay filling.

It is conceded by every dentist that the ideal filling material is the plastic, and that our cements now used meet the conditions; as it is both a strengthening and supporting medium, but its solubility prohibits its use except in few cases such as temporary fillings.

There is a large class of cavities which often puzzle the conscientious dentist as to what is the best to do for them; most often found in the mouth of ladies where you cannot afford to crown because of the exhibition of gold and of that character which every dentist recognizes as poor quality. We find them very often deeply decayed, the dentin all gone from the buccal and lingual walls of cavities, leaving only transparent enamel, which, filled with metal, will result in a failure either by recurrence of decay or discoloration if amalgam is used, if filled with gold it necessitates great expense to patient as well as a long, tedious operation to the operator, and when your best is done with any of the methods of procedure in vogue, you quit your work with more or less feelings of uncertainty. A better method to treat these difficult conditions is what I propose to describe for your consideration, not claiming it as entirely original, yet the result I give you is from years of experience. Take, for example, two cavities in sub-bicuspids, get plenty separation, then with the sandpaper disks straighten and smooth the margins, remove all decay without any attempt at forming retaining points, next take a piece of pure gold about 30 gauge, place it over the cavity and mark it on both sides of the tooth; remove and trim, thus making the gold approximately the size needed, but always leaving it a fraction larger than the cavity, using contouring pliers to give it contour in the inter-dental space. Now place the gold in position, then, with a wooden wedge or screw matrix placed between or around the teeth to hold the gold in position; burnish it well into the occlusal portion of cavity, removing as often as may be necessary to cut off excess of gold; burnish it to conform the cavity margins, always overlapping them and have patient to close mouth and bite firmly against gold, thus giving required shape at occlusion. Now cut a very narrow piece of gold, about one-half inch in length, making it almost square wire, and roll around the point of a small instrument, which gives you a small coil; solder the coil in the depression made by the contouring pliers by first using a very small piece of 18k solder at the desired point, then put coil in position and heat again. This seemingly trivial point is quite important, as it prevents the solder from flowing over the coil and making it stiff. Shape the coil so it will go in the cavity, polish the gold outlay with sandpaper disks, bringing the margins of the gold to a feather edge, then cement gold outlay in position, holding it by a band matrix, the ends of which are brought together by a screw, having patient to bite on it at same time till cement hardens, then grind off occluding portion of antagonizing tooth. You now have a perfect filling of cement; it would seem forever durable by the covering of the gold outlay. This is not given you as an experiment, for I have been making them for years.

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*From Dental World.

Another and valuable method of finishing these fillings is to make the gold plate a line or two smaller on buccal and lingual margins and level the edges; then, after the cement hardens, cut out and fill with gold between the margins of the gold outlay and the margin of the tooth.

NIRVANIN AS A LOCAL ANAESTHETIC FOR EXTRACTION.*

BY A. W. STRECKER, D. D. S.

Nirvanin is a soluble form of orthoform. A solution can be made either in setrilized water or a physio-logical salt solution. It is non-toxic, has no effect on pulse or respiration, and is antiseptic.

REPORT OF CASES.

Mrs. W., aged forty-three years. Under a physician's care for nervous disorder. The following roots were extracted: In the upper maxilla on the right side a central incisor, a second bicuspid and first molar; on the left side a second bicuspid and first molar. Four minims of a five per cent. solution were injected on the labial and palatal aspect of the tooth, using two minims to each buccal root of the molars. After waiting three minutes I began extracting with the first and second tooth; the patient complained of pain, but not with the remainder. At a subsequent sitting I removed the following roots from the lower maxilla: The first molar on the right side, and the first, second and third molars on the left side. I injected eight minims to each tooth, injecting four minims over the mesial root, and allowing it to anæsthetize the buccal root by infiltration. After waiting five minutes I began extracting; the patient felt no pain.

Miss McW., aged twenty-four years, presented herself, complaining of severe pain in the region of the second bicuspid, lower maxilla, left side. The tooth had been crowned, but the crown had broken off two years before. I found the pulp canal filled with cement. All indications pointed to an abscess. I injected fifteen minims of a five per cent. solution. The gum was not sensitive to touch after five minutes; but as applying the forceps to the root caused severe pain, I waited three minutes longer. On again applying the forceps the root was extracted with but slight discomfort to the patient. I also extracted the first and second molar on the left side, which were firmly attached, and the cuspid on the right side, which was loose. Twenty minims were injected for the molars, eight minims for the cuspid. Five minutes after the injection the molar was extracted without discomfort to patient, but the cuspid caused severe pain. I have since noticed that the action of nirvanin seems more satisfactory where there is a firm attachment than where the root is loose.

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*From article in Dental Brief.

Mrs. S. W., an anæmic patient, fifty-five years of age, was under my care for pyorrhœa. The third molar in the right maxilla was loose, in malposition, and slightly decayed, and I decided upon extraction. Twelve minims of a five per cent. solution was injected. Upon attempting extraction after five minutes, the pain was very severe. I then injected eight minims and after three minutes, five minims more—in all, twenty-five minims. After waiting three minutes I extracted the tooth; the patient assured me that she felt distinct and sharp pain. Six days later I removed the root of the left lower second bicuspid; the root was firmly anchored. Eight minims of a five per cent. solution were injected. After five minutes I extracted the tooth without any discomfort to the patient.

Miss W., aged twenty-five years. I extracted the roots of both lower third molars, using twenty minims of a five per cent. solution. I also removed a small tumor between the cuspid and first bicuspid, upper right maxilla, using fifteen minims of a five per cent. solution. After eight minutes the tumor was removed. Carbolic acid was then freely applied. The patient experienced no discomfort whatever.

For. Mrs. J. F., aged twenty-one years, I extracted the following roots, all in the upper maxilla: Both first bicuspids, left central and right lateral incisors. Twenty-five minims of a five per cent. solution were used. Extracted after three minutes; pain was felt in the first tooth only, doubtless due to my commencing to extract too soon. * * *

Mrs. C. L. W., aged forty years, was sent by a physician to have roots removed, as they were badly decayed, very offensive, and were very annoying to the patient. The physician strongly advised against giving any anæsthetic, unless I could use a local anæsthetic not containing any cocaine, as the patient was especially susceptible to its influence. The patient was extremely nervous, having a pulse of ninety-five from the dread of having the teeth extracted. The physician gave a minute dose of aconite, and after fifteen minutes the patient was apparently calm enough to have the tooth extracted. I injected twenty minims of a five per cent. solution. The patient complained of severe pain during the extraction, but also felt pain whenever I attempted to work in the mouth, when I touched the gum, also when I touched a sound tooth with an explorer.

In one case (name of patient not recorded) I removed four roots—the cuspid and first molar, left side, and first and second bicuspids on the left side. I used thirty minims of a five per cent. solution. The patient became nervous and did not feel able to have the forceps used, so I used the elevator, and the patient felt no discomfort. In other cases of extraction of single teeth, five were removed without pain, two with slight pain. I used eight minims of a five per cent. solution in each case.

Upon injecting a solution of nirvanin the gum is slightly blanched. After removing the needle, in about five seconds a slight escape of blood occurs. When the tooth is extracted a rather severe flow of blood occurs for a minute or two; after that time it becomes normal. A slight swelling of the gums, accompanied by pain, has occurred in every case in which more than one tooth was extracted. This may be owing to injury to tissue, or to the large quantity of nirvanin injected; but as both symptoms are slight and disappear in from three hours (shortest time) to twenty-seven hours (the longest), and as they are at no time sufficiently severe to interfere with the patient's sleeping, the gums healing very nicely, exhibiting no signs of sloughing, this is not a very serious objection to the employment of nirvanin as a local anæsthetic.

EXTENSIVE IRRITATION FROM A MALPOSED ROOT.*

BY C. M. BALDWIN, D. D. S., CHICAGO.

In July the following case appeared at the South Central Charity Dental Clinic. The patient was a woman, thirty-three years old, had been married when sixteen, had borne seven healthy children, and never had a miscarriage. When a girl she was treated for tuberculosis, and made a complete recovery, though six brothers and sisters died of the disease. In addition to her home duties, she had washed and scrubbed for others, consequently was somewhat emaciated and aged much beyond her years.

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*From Dental Digest.

In November, 1896, a red spot was noticed on the left cheek opposite the lower first bucuspid. Her fears were aroused and she went to the free dispensaries of two of the largest medical schools. In describing the case to the students one of the physicians called it a cancer, saying that an operation would be necessary to remove it, and that the necrosed bone would have to be scraped. The patient inquired if that would not leave a bad scar, and the doctor said there would be one anyway. One doctor referred her to one of the dental schools, saying that her's was a very bad case, which should be treated by a dentist. With the exception of occasional sharp shooting pains along the interior maxillary nerve she experienced but little annoyance, and when an appointment was made for the operation she did not present, but postponed it as long as possible.

Two years later she came to the Charity Dental Clinic. She said that the condition was much worse in every way. The inflamed area had spread until it was almost two inches in diameter, circular in form, slightly swollen, of a dull red color, and the surface was uneven like that of a cauliflower, having a fissure in the center about three-fourths of an inch long and one-sixteenth deep, the edges almost meeting and covered with broken-down epithelial cells, presenting a caseous appearance. During the last two weeks a gradually increasing numbness in the part appeared, so that there was sufficient anesthesia to allow of considerable pressure without any pain, except in the center.

The mouth was in a terrible condition, tartar and fermenting debris covering the teeth and numerous roots. The upper right second bicuspid was the only tooth missing, but the cuspids and incisors were the only sound teeth in the lower jaw. The lower right second molar was badly decayed, while only the roots remained of the first molar and both bicuspids. Only the roots were left of the molars and bicuspids on the lower left side. The lower left first bicuspid was partially displaced. The cervical portion remained in place, while the apex was deeply imbedded in the submucous tissues, pointing directly towards the center of the inflamed area upon the cheek, at an angle of forty-five degrees. The soft tissues over the middle third of the root were severed as if by a knife, and the external plate of the alveolar process had been destroyed by the abscesses, leaving this portion of the root exposed to view—white as bleached bone. The upper third of the root was firmly held by the alveolar process.

The patient reported having had numerous abscesses from the different roots, and was quite certain that this root was abscessed before her marriage, over seventeen years ago. When the pus pocket became filled she applid a fig to vacuate it, and claimed to have repeated this over one hundred times for this one root. When I saw the case there was no pus present. There had never been any attempt made to remove the root, neither before she went to the medical schools nor by anyone there. At neither school would they extract the root unless she remained in the hospital over night. Since nature moves along the line of resistence, doubtless as the alveolar process became weakened and broken down the force of masticating upon these roots, the downward and lateral pressure exerted, tipped this root into the position in which I found it. The patient said the root had been in that position for many years. While we frequently find third molars erupting having their occlusal surfaces directed mesially or buccally, it is very improbable that this tooth erupted as found, but rather that it became displaced soon after the process was destroyed.

I thought the entire trouble with the cheek had been caused by the mechanical irritation of the root, and decided upon its immediate removal. The abscess had destroyed the alveolar process and the soft tissues covering it, but was not directly responsible for the condition of the cheek. When the trouble started she had been pregnant for some months, hence more liable to succumb to any destructive process; and when the irritation was greatest there was no pus about apex of root. After pressing the soft tissues away an elevator was placed under the free end of root, raising it until the weakened process released its hold, altogether making a very simple operation. The patient went home immediately and felt no unfavorable effects at any time following the extraction. She was dircted to report in less than forty-eight hours, but I did not see her again for about four weeks, when almost all effects of the abscess and root had disappeared. The active irritant being removed nature needed but little assistance to complete the cure. Six weeks after the root had been removed the parts were healed, but slight redness remained, all soreness and pain had disappeared, and the censory nerves were normally responsive.

The neglect and physical condition of the patient seemingly would have favored the development of epithelioma under such conditions, for while she was but thirty-three, she appeared to be past forty. This heavily burdened woman had been weighted down with the prospects of an operation for the removal of a cancer and necrosed bone. The dread of such a formidable ordeal was sufficient to cause her to postpone it indefinitely, as the pain most of the time was not great, but how great a relief it would have been, mentally and physically, and how gladly would she have had the root extracted years before had she been instructed as to the dangers possible from the retention of such teeth. The charity dental clinics may do much good to the ignorant and poor classes, by *enlightening* them, as well as by affording relief from their sufferings.

OXIDE OF ZINC AND EUGENOL AS A COVERING TO PULPS.*

BY S. B. LUCKIE, D. D. S., CHESTER, PA.

That which makes the mixture of oxide of zinc and eugenol of value is that it possesses the properties of a good protector to the pulp, a therapeutic agent and a filling-material combined, and can be used as either one or all, if desirable, in the same case. It makes a good covering for arsenous acid, as it can from the peripheries of the cavity be domed over the application, thus avoiding pressure, and, being a soothing obtundent, adds to the possibility of lessening or preventing pain, so likely to follow arsenical dressings. * * *

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*Extracts from International Journal.

While its virtues are many, I do not wish it understood that they are extolled to the same degree as is done for proprietary cements for pulp covering and dressing; it will not in all cases maintain comfort in all the stages of pulpitis, nor does it do away with all pulp devitalization and extirpation, but, in the hands of the careful and conscientious practitioner, it will aid in giving comfort after filling in those cases of sensitive dentin and of deep-seated caries, and very greatly reduce the number of cases of pulpitis and pericementitis that occur in filled teeth. It can be used to fill deciduous teeth where it would not be wise to prepare the cavity for a metal filling, and is often preferable to gutta-percha, as its use is more possible to maintain comfort and prevent pulp and peridental complications. It makes a good trial filling where caries have approached very near the pulp, and if no complications follow, when worn away it can be covered with amalgam or gold.

In those teeth where the pulps had died under a filling of oxide of zinc and eugenol, the first case is to be presented with the pulp putrescent and foul smelling, the contents of the chamber and canals always being dry, and there being no exhibition of peridental irritation. Of course, it is to be understood these were cases seen before the filling had wasted sufficiently to allow the fluids of the mouth to enter the pulp-chamber.

As an intermediary under zinc phosphate fillings, it will prevent the phosphoric acid from irritating the pulp. In all cavities of much depth on the occlusal surfaces of bicuspids and molars it should precede the filling, and in approximal cavities a pad of it should be placed on the region overlying the pulp, the mix being made quite thick to hasten the setting, and the cavity walls be covered with a quick-drying lining and filled with whatever material is designated.

To enumerate, the cement made from oxide of zinc and eugenol is useful to fill cavities with exquisitely sensitive dentin for a period of time elapsing from a few weeks to months, as a trial filling, as an intermediary in deep cavities, as a covering for pulp and canal-dressings, and as a non-removable canal-filling.

As a canal-filling it can be used with advantage on account of its slow setting, allowing more than ample time for its introduction. The method adopted for canal-filling is to pump it in with Swiss broaches until all possible parts of the canal are apparently reached by it, when a cone of temporary stopping is placed in the canal and pressure made towards the apex.

With an experience of about six years, it has been a valuable aid in the treatment of teeth and in preventing the discomfort from thermal changes that so often follow their filling. I am not unconscious, however, that it might be improved by the addition of other antiseptics; indeed, it has often occurred that a series of bacteriological experiments might be conducted with advantage to prove the value of different intermediary used between filling and dentin, or as pulp-caps.

Aristol or hydronapthol can be mixed with oxide of zinc, in about equal quantity, and, if mixed with eugenol, a cement with about the same degree of hardness is obtained, though clinically I have obtained no advantage from the addition.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

TREATMENT OF LEAD.—Sulphur added to molten lead will cause it to be clean and pliable when cooled.—*P. A. Mariotte, Pac. Den. Gazette.*

USES OF 120 ROLLED GOLD.—Always use 120 rolled gold for backing up teeth, for the base of crown, for stamping up cusps and for the base of cast fillings and hood abutments.—*C. L. Alexander, in Dental World.*

FOR LINING A MATRIX TO BE FILLED WITH SOLDER.—Use 30 or 60 rolled gold and sometimes 120, if a large surface is to be covered, and at a point where strength is required to prevent a cave-in when soldering.—*C. L. Alexander, in Dental World.*

COIN GOLD FOR BANDS.—Always use coin gold for making bands in crown-work; it is tough and strong. These qualities enable you to reduce the thickness one-half, which gives a great advantage in way of easy manipulation and adjustment.—*C. L. Alexander, in Dental World.*

VIOFORM, A NEW SUBSTITUTE FOR IODOFORM.—Tavel *(Deutsche Zeitschrift fur chirurgie)* considers "vioform" as the best substitute for iodoform, and in non-tuberculous cases he thinks it is superior to that drug. The powder is odorless and forms a convenient paste with liquids.

TREATMENT OF NEURALGIA.—In the treatment of neuralgia, where you suspect that the tooth or the teeth are not at the bottom of it, although the physician declares it must be so, you should always suggest that he try doses of quinine and see if there is not malaria connected with the matter.—*E. C. Briggs, International Journal.*

PIANO-WIRE APPLIANCES SHOULD BE WATCHED. Appliances in which piano wire is used for regulating should not be left unobserved for a length of time, or we may get movement in excess of that we require. I have more than once seen bicuspids and molars moved quite outside the bite by the continual wearing of a split plate.—*G. Thomson, Jour. Brit. Asso.*

EUCALYPTO-PERCHA.—Dr. W. F. Green first dissolves gutta-percha in chloroform, allowing it to stand a sufficient length of time to become thoroughly dissolved; and then adds eucalyptus to the chloro-percha, allowing the chloroform to evaporate through antiseptic gauze and gradually adding more eucalyptus until the mass is of the proper consistency. While this method is not new, he claims that by so doing he gets the gutta-percha into a more finely comminuted form than could possibly be done by the simple use of eucalyptus. By the aid of the microscope, the mass, to all appearances, is much more homogeneous than is chloro-percha. It is used in filling root-canals in the usual manner, being pumped in thoroughly and followed by a gutta-percha point.—*Review.*

RETAINING APPLIANCES FOR LOOSE LOWER INCISOR TEETH.—The teeth were devitalized; the pulps removed through openings drilled on their lingual surfaces, and the apical portions of the canals filled. A backing of pure gold, not covering the cervical portion, was then burnished to each tooth, and a pin fitted to each canal. The pins and backings were then soldered together separately, again placed in position and burnished to careful adaptation to the back of each tooth. An impression was then taken with all the backings in position, a model run and the backings soldered together. The whole appliance was then cemented in position. The doctor himself being the patient, commended the comfort and general result of the operation very highly. No gold was visible and the teeth were very securely held in position.—*A. N. Copsey, in Pacific Dental Gazette.*

ROOT-CANAL TREATMENT.—If, after preparing root-canal, I have reason to suspect fragments still remaining at the apical extremity of the root, I dry the canal, fill with a 25 per cent solution of hydronapthol in alcohol and with unvulcanized rubber exert enough pressure to saturate the remaining tissue with hydronapthol. I then dry the canals, moisten with eucalyptus as before and proceed with the filling. In some cases of recently devitalized pulps we find that, instead of having a vital pink or red color, and its removal causing hemorrhage from the apical foramen, the pulp has a yellow or yellowish white color, with no bleeding, showing that putrefactive changes have been going on, and that infection may exist at the apex. In such cases, after treating with the sulphuric acid and soda, I leave, sealed in the tooth for a few days, oil of cloves containing 1 per cent of formaldehyde. If at the next sitting there is no soreness in the tooth, nor any effusion into the canals, I assume that they are ready for filling.—*H. Clark, Dominion Journal.*

GOLD SOLDER AND SOLDERING.—Use three or more grades of solder. I manage with 18-20 and 22k., using the 22k. for soldering bands, pins, filling cusps, making anterior cast fillings and bridge abutments. Twenty-two karat solder is used in filling the body of hood abutments made for the bicuspids and molars. Where the first soldering has been done with a high-grade solder, a lower grade can be used without taking any risk of damaging the work. To avoid air holes and to get the best results when soldering use the crystal borax, rubbing the same upon a clean porcelain slab each time. If this precaution is not taken, you will be annoyed very much, as the borax deteriorates rapidly when left on the slab to dry out. A most convenient, clean and effective soldering outfit (and one which cannot be dispensed with in making cast work) can be made by securing a druggist filtering rack and placing upon the swing bracket a piece of wire gauze, upon which the case to be soldered is placed and heated from below with a gas burner of the telescope variety. After the case is thoroughly hot, a few blasts from one of the improved gas blown pipes will flow the solder.—*C. L. Alexander, in Dental World.*

METHOD OF BANDING LOGAN CROWN.—Grind the root up well under the gum margins and fit the crown closely to it. Remove the enamel and fit a cap as for a Richmond crown. Punch a hole in the center of the cap, drive it on to the root, and the crown firmly against it. If you cut off the band in the right place you will have just as good a fit now between the crown and cap as you had between the crown and root. However, if any fitting is necessary grind the crown to fit the cap, fill the space in the crown with soft unannealed foil, packing it loosely until it stands quite out of the space. Drive the crown firmly against the cap. This condenses the gold and gives a tight joint between the cap and crown. Remove the cap and crown carefully, place 18 k. solder around the post, and solder all together. The solder flows out into the foil, making a strong union. Wrap the crown with one thickness of asbestos paper and the post with several; this prevents the post heating in advance of the porcelain. It may be held in the flame and soldered as an all-gold crown without investing. I much prefer this to a union depending upon cement in any form. There is a crown, however, that is not upon the market that admits of so much better an adaptation that it may not be amiss to describe it. This crown is baked on a platinum tube; the post screws into it and is "keyed to place." The post may be of German silver or any cheap metal which is much stiffer than platinum. To construct a crown the root would be cut off, a cap made as described for the Logan, and the post keyed to place. After fitting the cap to the root and the crown to the cap, place between the crown and the cap a thin layer of Watts sliced gold, and drive the crown firmly to place. Now remove the cap and crown carefully and screw the nut down the post and firmly against the cap. This gives you a perfectly tight joint between the cap and crown, and firmly unites the two; does away with the necessity of heating the crown, does away with that space, gives a wider range of adaptation, and gives many advantages space will not permit to mention.—*W. H. Dwight, in Dental Cosmos.*

TO THE DEANS OF THE AMERICAN DENTAL COLLEGES, MEMBERS OF THE NATIONAL ASSOCIATION OF DENTAL FACULTIES, AND TO THE MEMBERS OF THE FOREIGN ADVISORY BOARDS.

Gentlemen—

The regulations of our National Association place the supervision of foreign educational matters which affect American colleges in the hands of the Foreign Relations Committee, and of the European Advisory Boards.

At the last annual meeting some new regulations were adopted, which limit to a certain extent the reception of foreign students, take the matter out of the exclusive hands of the Deans and make it uniform in all the colleges by requiring the approval of the Association, through its proper committee, whose decision must be reviewed at the annual meeting. We think all will comprehend the advisability of this, that the Deans may have some rule by which they may be governed and be enabled to avoid the responsibility of the acceptance of credentials in foreign tongues, with which they may not be acquainted

We all agree upon the desirability of some uniform standard which shall apply in every case, and which will be just to all. It is quite probable that the regulations adopted at the last meeting of the National Association, which were recommended by the Foreign Relations Committee, will need amendment as we obtain further knowledge concerning foreign equivalents. The Foreign Relations Committee will each year present to the Association any new information which they may have upon the various subjects, and be prepared to make such recommendations as in their judgment will best secure the end in view. In obtaining this knowledge the Foreign Relations Committee must necessarily depend very largely upon the Advisory Boards. To these positions have been appointed the men who, in the minds not only of the Foreign Relations Committee, but other well-informed members of the profession whose advice they have sought, are best qualified to perform the necessary duties. Hence, we feel that we may rely upon their recommendations, and as they are so completely and honorably identified with us and are aware of the responsibility resting upon them, we do not fear that our confidence will be misplaced.

The regulations adopted at the last annual meeting of the National Association have been widely published; they have been incorporated in a pamphlet circular of information and sent to everyone concerned. Hence all have had an opportunity for knowing just what was the action taken. We trust that before the next meeting of the Association all will have so fully considered the situation that they will be better enabled to act than they were when the regulations were adopted.

Since the annual meeting at Old Point Comfort the members of the Foreign Relations Committee have carefully consulted with each other, and have unanimously arrived at the conclusion that it is not wise to attempt the enforcement of the regulations during this year for the following reasons:

First, those regulating the giving of advanced standing in our schools were not adopted until after the announcements of the colleges for the current year had already been published and distributed. It has been established by precedent that in such instances legislation should not go into effect until the next succeeding year.

Second, the regulations adopted at Old Point Comfort could not be promulgated until students from foreign countries had already, in some instances at least, sailed for America, and it would be an unjustifiable hardship to make them subject to new rules with which they had no opportunity to become acquainted.

Third, it has appeared to us advisable, before attempting to enforce them, that the new regulations should be published to the world for the benefit of all concerned, that it might be learned if in any way they work injustice, are impracticable, or are not in accordance with the laws of this or other countries.

Accordingly, the Deans who have forwarded to the committee the papers of students have been informed they can use their discretion in the case of those from Great Britain, Germany, Austria, Switzerland, France, Holland, Belgium, Sweden, Norway and Canada, subject always to the subsequent approval of the National Association. Even although there may be some technical lack of observation of the rules, the Foreign Relations Committee will take no cognizance of it, so long as the Deans act in good faith, always provided that the students shall obtain the approval of their papers by the Advisory Board of the country from which they come.

The above relates solely to the giving of advanced standing in our colleges on the basis of attendance on foreign schools, which may be offered as an equivalent for courses in our own institutions.

Concerning the preliminary educational and moral qualifications, and the reception of foreign students as members of the freshman class, the approval of the Advisory Board for the country from which the student comes should, in all cases, be insisted upon as provided by the regulations adopted at the annual meeting for 1899. Should a foreign student present himself without certificate, the Dean may, upon his own responsibility, receive him temporarily, on condition that within a reasonable time he shall secure such approval. If this is not done, the student shall be dismissed before the middle of the term and no credit be given him for his attendance.

This ruling of the Foreign Relations Committee may seem somewhat unnecessary, but it is deemed best that it shall be promulgated by means of this circular, that there may be no misunderstanding or misconception of the law of the Association. It is not to be understood that the Foreign Relations Committee desires to assume any authority not fully conferred upon them by the National Association, to which, in every instance, it is responsible. It desires to so inform the Deans and others interested that trouble may be saved, that there may be a full comprehension of the situation, and that it may not be imagined they are in any way attempting to interfere with established custom, or with the published rules of the National Association.

W. C. Barrett,
Chairman Foreign Relations Committee.

NEW PUBLICATIONS.

The American Text-Book of Prosthetic Dentistry.—In contributions by eminent authorities. Edited by Charles J. Essig, M. D., D. D. S., Professor of Mechanical Dentistry and Metallurgy, Department of Dentistry, University of Pennsylvania, Philadelphia. Second Edition, Revised and Enlarged. In one octavo volume of 817 pages, with 1,089 engravings. Cloth, $6.00; leather, $7.00. Lea Brothers & Co.; Philadelphia and New York, 1900.

This is the recognized text-book on prosthetic dentistry, and fully deserves the praise bestowed upon it. The first edition was quickly exhausted, and the editor began the laborious work of revision. Revising a work on this branch is no small matter, as new ideas are constantly being advanced that take precedence over older methods and that which but yesterday was looked upon as the best is to-day cast aside for something more efficient. The four years that have elapsed between the first and second editions have brought many changes, but the editor seems to have been equal to them, for the book, in its present form, is thoroughly up-to-date. It has of necessity been increased in size and enough new engravings added to make a total of nearly eleven hundred, many of which are entirely original and designed to elucidate special and peculiar devices and procedures not heretofore shown in any text-book.

The editor states that it has been his purpose to describe in detail those principles which are applicable to the greatest number of cases, and to sift from the innumerable devices and operations which have been given to the dental profession those which have received, after a thorough test, the endorsement and continued application by the most skilled and experienced prosthetists.

The book, as a whole, contains descriptions of methods and appliances which a consensus of opinion has declared to be the best that dental prosthetic art has evolved, and is a work that the practitioner, as well as the student, will find beneficial.

The contents, in brief, are as follows:

The Mechanical Laboratory: Its Equipment and Arrangement.—Metals and Alloys in Prosthetic Dentistry.—Orthodontia Technic, including the Principles of Metal Work.—Moulding and Carving Porcelain Teeth.—The Preparation of the Mouth: Choice of Material and Type of Denture.—Taking Impressions of the Mouth.—Making of Models, and their Preparation.—Dies, Counter-dies, and Moulding.—Swaged Metallic Plates.—The " Bite " or Occlusion.—Selecting and Fitting Teeth: Attachment, Finishing.—English Tube Teeth: their Use in Plate, Crown, and Bridge-work.—Continuous Gum Dentures.—Cast Dentures of Aluminum and Fusible Alloys.—Vulcanized Rubber as a Base for Artificial Dentures.—Celluloid and Zylonite.—Tempermental Characteristics of the Teeth in Relation to Dental Prosthesis.—Artificial Crowns.—Bridge-work.—Hygienic Relations and Care of Artificial Dentures.—Palatal Mechanism.

The editorial staff assisting in the compilation of the book consists of Drs. C. J. Essig, C. L. Goddard, H. H. Burchard, Grant Molyneaux, Ambler Tees, N. S. Essig, W. W. Evans, A. H. Thompson, and R. Ottolengui.

DISCOVERY OF ANESTHESIA, by DR. HORACE WELLS. Philadelphia: Patterson & White Co., Pub. 1900.

This is a report of the memorial services at the fiftieth anniversary of the discovery of anesthesia, held in Philadelphia, Dec., 1894. The book contains 124 pages, and is attractively bound.

BOOKS RECEIVED.

"Principles and Practice of Filling Teeth." By C. N. Johnson, M. A., L. D. S., D. D. S.—S. S. White Co., Pub. 1900.

"Malocclusion of the Teeth and Fractures of the Maxillæ," By Edward H. Angle, M. D., D. D. S.—Sixth edition, enlarged and entirely rewritten—S. S. White Co., Pub. 1900.

"Artificial Crown and Bridge-work." By Geo. Evans; sixth edition, revised.—S. S. White Co., Pub. 1900.

SOCIETY.

NEW JERSEY STATE DENTAL SOCIETY.

At its last meeting the following were elected officers of the N. J. Dental Society for the ensuing year: F. E. Riley, President; W. L. Fish, Vice-President; H. A. Hull, Treasurer; C. A. Meeker, Secretary.

THE INSTITUTE OF DENTAL PEDAGOGICS.

The seventh annual meeting of the Institute of Dental Pedagogics will be held in Nashville, at the Maxwell House, beginning at 10 o'clock, Thursday, December 27th, 1900, and will continue three days. Every one interested in dental teaching should feel it his duty to attend, as it is his privilege to speak on any subject on the program. The interest of last year will be maintained, and the plan of developing thoroughly few topics given a trial. A most cordial invitation is extended to all, especially those who are teachers.

Henry W. Morgan,
D. M. Cattell,
W. Earl Willmott,
Executive Committee.

OUR AFTERMATH.

PERSONAL AND MISCELLANY.

A. W. Lane, D. D. S., of Sandusky, O., has moved to Muncie, Indiana.

Dr. Bogue will receive his patients after December 10 at 63 W. 48th street, New York. Dr. Bogue has definitely relinquished all his interests in Paris.

H. Q. Altenburg, the genial traveling salesman of the Ransom & Randolph Co., is again with the firm after a year's absence. Harry's dental friends will be pleased to hear the good news.

Fined for Illegal Practice.—In Tuscarawas county, Ohio, F. R. Ross was indicted for practicing dentistry without a license. November 13th he plead guilty to the charge and paid the fine, $25, and costs.

Dr. A. A. Bigelow Dead.—Dr. A. A. Bigelow, the "traveling dentist," known in many sections of Ohio, was stricken with paralysis while walking along the street in Newark, and died from its effects November 14.

Dental Journal Suspended.—The *British Dental Journal* (The Dentist) has suspended publication on account of lack of support. It was a wide-awake and progressive dental journal, filled each week with new and valuable ideas. Can it be possible that English dentists would not support it on this account?

Notice to Marksmen.—"Book agents may be killed from October 1 to September 1; spring poets, from March 1 to June 1; scandalmongers, from April 1 to February 1; umbrella borrowers, from August 1 to November 1 and February 1 to May 1; while every man who accepts a professional journal two years and upon being presented with the bill, says, 'I never ordered it!' may be killed on the spot without reserve."

Prominent Dentist Injured in a Duel.—From the *Dental World* we learn that Jules J. Sarrazin, Dean of the New Orleans College of Dentistry, was shot and probably fatally wounded by Armand Mary, a prominent dentist of New Orleans, on August 25, 1900. The men were leaders of opposing factions during the pendency of the last dental bill, and became enemies. They afterwards fought a duel with the above result.

Apostrophe to the Dollar.—An editor has been inspired, after looking over his list of delinquent subscribers, to compose the following: "How dear to our heart is the good silver dollar, when some kind subscriber presents it to view; the liberty head without necktie or collar, and all the strange things which to us seem so new; the widespreading eagle, the arrows below it, the stars and the words with the strange things they tell; the coin of our fathers we're glad that we know it, for some time or other 'twill come in right well; the spread-eagle dollar, the star-spangled dollar, the old silver dollar we all love so well."

Dr. Charles Meeker Upheld.—Charges of incompetency and inefficiency were made against Dr. Chas. Meeker, member of the New Jersey Board of Dental Examiners, by Dr. G. Carlton Brown, Dr. E. M. Beesly, Dr. F. C. Barlow and Dr. George E. Adams, and other members of the Board, and the Governor asked to remove him from the Board. They asserted in the charges that the examination papers in question, which were marked 20 and passed by Dr. Meeker, were read over by the full board and there were found but six correct answers out of thirty, and, therefore, should have been marked only six. In the cross-examination of Dr. Barlow, who was a witness in support of the charges, Dr. Meeker's counsel took up the thirty questions and answers thereto, and succeeded in getting Dr. Barlow to admit that twenty-two of the thirty answers were correct, or partially correct. After hearing the full testimony, Gov. Voorheis rendered a decision dismissing the charges against Dr. Meeker and exonerating him. The Central Dental Association of New Jersey offered resolutions in behalf of Dr. Meeker, which, in part, were as follows:

"Whereas, The Governor has rightfully dismissed the charges and exonerated Dr. Meeker; be it

"*Resolved,* That it is the opinion of this society that our honored member, Dr. Meeker, has been the victim of an unjustifiable attack, and that he is entitled to and is hereby tendered the hearty congratulations of we, his fellow-members, on the refutation of the accusation made against him, and be it further

"*Resolved,* That these resolutions be spread upon the minutes and published in the dental journals as well as the public press of the State, wherein the charges against Dr. Meeker have appeared, to the just end that he be fully exonerated."

This was signed by F. Edsall Riley, president of the New Jersey State Dental Society, and seventeen others. Dr. Luckey presented another resolution, even more laudatory in tone, which was adopted unanimously.

A Note-worthy New Book.—The dental friends of Prof. John Uri Lloyd, of Cincinnati, author of "Etidorpha," will be pleased to learn of the success of his new novel, "Stringtown on the Pike." It has just been issued by Dodd, Mead & Co., New York, and over 10,000 copies were sold in advance of publication. It was selected as the Bookman's serial story for 1900. It is a work that has been in process many years, and has been carefully written during hours of recreation, this being the way Prof. Lloyd has spent the time that other men devote to sight-seeing, amusements, or sleep. The scene of the story is laid in one of the quaint villages in northeast Kentucky. It is dramatic in character, full of action, and intensly interesting from beginning to end, a wholesome, fascinating story that will at once place Prof. Lloyd among the prominent writers of fiction. If our readers want a book of real merit, marked with a freshness and originality not found in many contemporaneous works, and a thing so interesting that they are loth to lay down the book until it is finished, they should obtain this one from their stationer or direct from the publishers.